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ABSTRACT

GED "Scoreboost" materials target exactly the skills one needs to pass the General Educational Development (GED) tests. This book focuses on preparing for the GED mathematics test. It provides 16 strategies for developing the skills needed for measurement and data analysis. These are: (1) review the standard units of measurement; (2) review the metric units of measurement; (3) use the calculator with measurement problems; (4) use diagrams in measurement problems; (5) solve perimeter, area, and volume problems; (6) use the formulas page with set-up problems; (7) use formulas to solve problems; (8) grid in answers to measurement problems; (9) use tables and charts; (10) work with bar graphs; (11) work with line graphs; (12) work with circle graphs; (13) find mean, median, and mode; (14) solve probability problems; (15) use the calculator to solve data problems; and (16) grid in answers to data analysis problems. The test taker should practice these strategies, apply them to the GED practice activities in the book, and take the GED practice test at the end of the book. (SLD)

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GED Scoreboost™

MATHEMATICS
Measurement and Data Analysis

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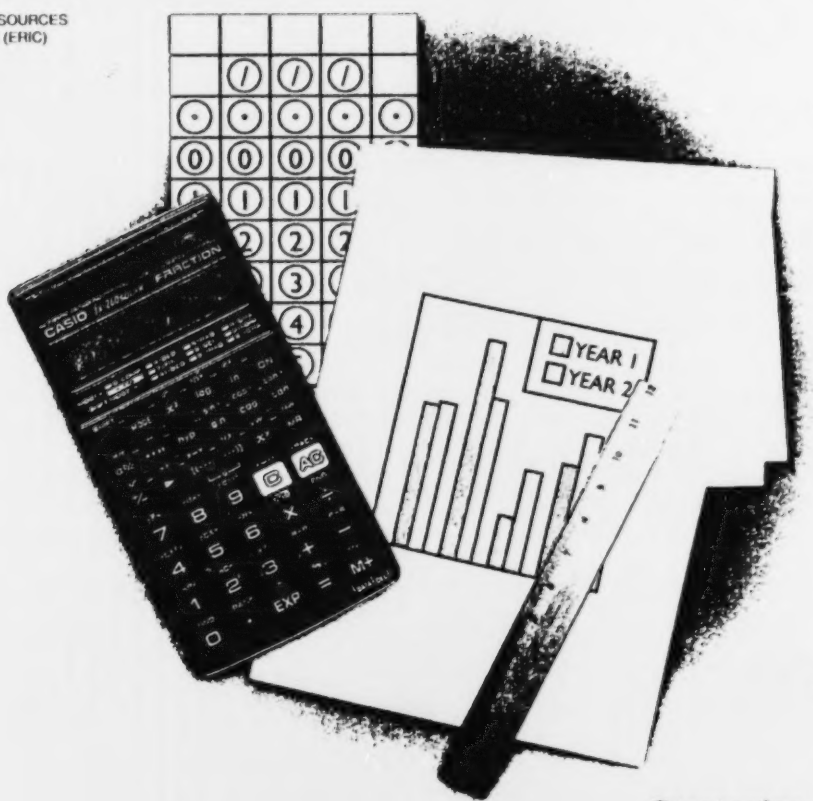

Scientific Calculator, Grids, and Problem-Solving Strategies

TM034799

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Contents

Strategy 1 • Review the Standard Units of Measurement 2
Strategy 2 • Review the Metric Units of Measurement 4
Strategy 3 • Use the Calculator with Measurement Problems 6
Strategy 4 • Use Diagrams in Measurement Problems 8
Strategy 5 • Solve Perimeter, Area, and Volume Problems 10
Strategy 6 • Use the Formulas Page with Set-up Problems 12
Strategy 7 • Use Formulas to Solve Problems 14
Strategy 8 • Grid In Answers to Measurement Problems 16

GED Practice 1: Measurement and Formulas 18

Strategy 9 • Use Tables and Charts 20
Strategy 10 • Work with Bar Graphs 22
Strategy 11 • Work with Line Graphs 24
Strategy 12 • Work with Circle Graphs 26
Strategy 13 • Find Mean, Median, and Mode 28
Strategy 14 • Solve Probability Problems 30
Strategy 15 • Use the Calculator to Solve Data Problems 32
Strategy 16 • Grid In Answers to Data Analysis Problems 34

GED Practice 2: Tables, Graphs, and Data Analysis 36

Practice GED Test 38

Answer Key 42

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The GED Scoreboost™ Advantage

GED Scoreboost materials target the skills that you need to pass the GED. To develop this program, we have built on decades of experience in teaching GED classes and preparing materials for hundreds of thousands of students who have passed the GED. We have studied the GED Tests thoroughly and have designed materials that will help you to succeed on the tests.

To prepare for the GED Mathematics Test, you will need to learn skills in number and operation sense, data and statistics, geometry and measurement, and algebra. However, to pass the test, you will need to develop skills in these key areas:

- **Calculator Skills**—You will be given a Casio *fx*-260 solar scientific calculator at the GED Testing Center. You may use it on Part I, which is half of the GED Math Test.

  You shouldn't wait until the day of the test to learn to use this calculator. It is more complicated than a regular calculator, and you need to make sure that you know how to use it effectively. Check with local office supply businesses or discount stores to find where you can buy a Casio *fx*-260. Buy one for yourself, work with it as you learn the *GED Scoreboost* strategies, and use it when you go shopping or pay your bills. If you do this, working with it on the GED Math Test will be a snap.

- **Problem Solving**—The GED Math Test is made up mostly of word problems and graphics. To pass the GED, you need to be skilled at solving these types of problems.

  No one learns to be a good problem solver overnight. To prepare for the GED Math Test, you need to practice with the types of problems that you will see on the test and to learn strategies for solving them. The *Math Scoreboost* books are based on proven problem-solving strategies.

- **Grids**—Forty out of fifty questions on the GED Math Test will be multiple-choice. The other ten problems are an alternate format that require you to solve them and then record your answer on a grid.

  GED Mathematics Scoreboost will give you lots of practice filling in both of the types of grids that you will see on the test.

This is the ***GED Scoreboost Advantage:*** Practice the sixteen strategies in this book, apply them to the two *GED Practice* activities, and then take the *Practice GED Test* at the end of this book.

You can also use these other books to prepare for the GED Math Test:
GED Mathematics Scoreboost: Whole Numbers, Decimals, Fractions, and Percents
GED Mathematics Scoreboost: Algebra and Geometry

To get more information about these and other GED Scoreboost titles, see the back of this book.

Good luck!
The GED Scoreboost Team

STRATEGY 1 Review the Standard Units of Measurement

The measurement system most commonly used in the United States is based on **standard units** of measure for length, weight, volume, and time. These measures and their equivalencies are shown in the box to the right.

Length
1 foot (ft) = 12 inches (in)
1 yard (yd) = 3 ft
1 mile (mi) = 5280 ft

Weight
1 pound (lb) = 16 ounces (oz)
1 ton (t) = 2000 lb

Volume
1 cup (c) = 8 fluid ounces (fl oz)
1 pint (pt) = 2 c
1 quart (qt) = 2 pt
1 gallon (gal) = 4 qt

Time
1 minute (min) = 60 seconds (sec)
1 hour (hr) = 60 min
1 day = 24 hr
1 week = 7 days
1 year = 12 months = 365 days

Use these rules to convert units of measure:

- To change from larger units to smaller units, multiply.
- To change from smaller units to larger units, divide.

EXAMPLE 1: How many feet are in 72 inches?

THINK: I will use the fact 1 ft = 12 in. To change from inches to feet, I will divide.

SOLUTION: 72 inches ÷ 12 = **6 feet**

EXAMPLE 2: How many inches are in 10 feet?

THINK: To change from feet to inches, I will multiply.

SOLUTION: 10 feet × 12 = **120 inches**

The following rules will help you perform operations with measurements. Always use the measurement facts from the box above to simplify your answer.

- To perform operations with standard units, always add and subtract like units of measure.
  Example: 2 c 5 fl oz + 1 c 15 fl oz = (2 c + 1 c) + (5 fl oz + 15 fl oz) = 3 c 20 fl oz = 5 c 4 fl oz
- Multiply each part of a measurement separately. Then simplify.
  Example: 2 ft 6 in × 5 = (2 ft × 5) + (6 in × 5) = 10 ft 30 in = 12 ft 6 in
- Before dividing, convert a measurement with more than one part to its smaller unit.
  Example: 1 hr 30 min ÷ 3 = (60 min + 30 min) ÷ 3 = 90 min ÷ 3 = 30 min

GED Problem

The net weight of the contents of a jar of tomato sauce is 1 lb 9 oz. What would be the net weight of the contents of 6 jars of sauce?

(1) 3 lb 6 oz
(2) 6 lb
(3) 6 lb 6 oz
(4) 9 lb 6 oz
(5) 12 lb 6 oz

THINK: I need to multiply the contents of 1 jar by 6.

Step 1: Multiply the pounds and ounces separately. (1 lb × 6) + (9 oz × 6) = 6 lb + 54 oz
Step 2: Simplify. Change 54 ounces to pounds and ounces, and add.

Divide: 54 oz ÷ 16 = 3 lb 6 oz

Add: 6 lb + 3 lb 6 oz = 9 lb 6 oz

ANSWER: (4) 9 lb 6 oz

TESTWISE ① ② ③ ④ ⑤

Look at the answer choices before you begin working the problem. Make sure that your solution is expressed in the same units of measure as the answer choices.

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Apply the Strategy

Directions: Solve the problems below. For problems 1–3, first write the measurement fact that you will need from the box on page 2 to solve the problem.

1. Alice processes health insurance claims. It takes her an average of 10 minutes to check the paperwork on one claim. At that rate, how long will it take her to process 20 claims?

   (1) 3 hr 10 min
   (2) 3 hr 20 min
   (3) 3 hr 40 min
   (4) 4 hr 10 min
   (5) 4 hr 30 min

   Measurement Fact: _____

   Answer: _____

2. Stan's son is 57 inches tall. What is his height in feet and inches?

   (1) 4 ft 7 in
   (2) 4 ft 8 in
   (3) 4 ft 9 in
   (4) 4 ft 11 in
   (5) 5 ft 7 in

   Measurement Fact: _____

   Answer: _____

3. A nursery has 6 pounds of flower seeds. How many 5-ounce packages of seeds can the nursery fill? (*Hint:* A package must have 5 ounces of seed to be full. Discard any remainder.)

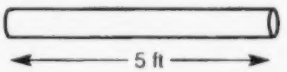
   (1) 11
   (2) 16
   (3) 19
   (4) 30
   (5) 96

   Measurement Fact: _____

   Answer: _____

4. A copper pipe is 4 yards in length. If the length shown below is cut from the pipe, what is the measure, in feet, of the remaining piece?

   (1) 1
   (2) 4
   (3) 6
   (4) 7
   (5) 9



5. To make a fruit drink for a party, Tony uses the following recipe:

   Party Punch
   2 quarts cranberry juice cocktail
   3 pints club soda
   3 cups apple juice

   Tony combines the ingredients in a large punch bowl. How many cups of the punch does the bowl contain?

   (1) 17
   (2) 14
   (3) 13
   (4) 8
   (5) Not enough information is given.

6. Using a tape measure, Pat finds that the length of a ceiling beam is 114 inches. What is the length of the beam in feet?

   (1) 9
   (2) $9\frac{1}{2}$
   (3) 9.6
   (4) $9\frac{3}{4}$
   (5) 10

Answers start on page 42.

STRATEGY 2 Review the Metric Units of Measurement

The **metric system** is a decimal system of measurement. It is based on the powers of ten. The main units of measure are:

meter (m)	a measure of length	a little longer than one yard
liter (L)	a measure of volume	a little more than one quart
gram (g)	a measure of weight	a small fraction of an ounce

Prefixes are added to the basic units to form larger and smaller units of measure. The basic unit and major prefixes are shown in the table below. To write the abbreviation of a measurement, write the prefix abbreviation first and then the abbreviation of the basic unit. For example, the abbreviation for centimeter is cm, which means that a centimeter is $\frac{1}{100}$ of a meter.

	Basic Unit		
kilo- (k)	**gram, liter, meter**	**centi- (c)**	**milli- (m)**
1000	1	$\frac{1}{100}$ or 0.01	$\frac{1}{1000}$ or 0.001

To convert from one unit to another:

- Multiply to find out how many small units equal a large unit.
- Divide to find out how many large units equal a number of small units.

EXAMPLE: How many kilograms are in 4000 grams?

THINK: A kilogram is larger than a gram, so I divide, using the fact 1000 g = 1 g.

DIVIDE: 4000 grams ÷ 1000 = 4 kilograms

SOLUTION: 4000 grams = **4 kilograms**

Operations with metric units follow the same rules as operations with decimals.

GED Problem

Nathan has three lengths of chain measuring 1.5 m, 2.4 m, and 80 cm. What is the total length of the three chains in meters?

(1) 2.88
(2) 3.98
(3) 4.7
(4) 11.9
(5) Not enough information is given.

THINK: I can add to find the total, but I will first need to write each measurement using the same unit. Since the answer choices are in meters, I will change 80 centimeters to meters.

Step 1: The unit *centimeter* means $\frac{1}{100}$ meter.

Multiply: 80 cm × $\frac{1}{100}$ = $\frac{80}{100}$ = 0.80 or 0.8 m

Step 2: Add: 1.5 + 2.4 + 0.8 = 4.7 m

ANSWER: (3) 4.7

TESTWISE ① ② ③ ④ ⑤

The answer choices in a GED problem do not usually have labels. Instead, the label for the answer may be stated in the question, as in the sample problem above.

Apply the Strategy

Directions: Solve the problems below. For problems 1–3, first write the metric measurement fact that you will need from the box on page 4 to solve the problem.

1. Kyong buys 6 small cans of wood stain. Each can contains 250 milliliters (mL). How many liters of stain did Kyong buy?

   (1) 1.5
   (2) 10.5
   (3) 15
   (4) 25
   (5) 150

   Measurement Fact: _____

   Answer: _____

2. A kitchen countertop is 2.6 meters long. Mark plans to line the front edge of the counter with ceramic tiles. Each tile (including mortar) takes up 10 centimeters. How many ceramic tiles will Mark use to line the front of the countertop?

   (1) 26,000
   (2) 2,600
   (3) 260
   (4) 26
   (5) Not enough information is given.

   Measurement Fact: _____

   Answer: _____

3. A swimming pool is 50 meters long. How many times would a swimmer have to swim the length of the pool in order to swim one kilometer?

   (1) 2000
   (2) 200
   (3) 20
   (4) 2
   (5) Not enough information is given.

   Measurement Fact: _____

   Answer: _____

4. The nutrition facts on the side panel of a box of snack crackers reveal the following information:

A single serving contains:
1.5 grams of saturated fat
500 milligrams of polyunsaturated fat
2.5 grams of monounsaturated fat

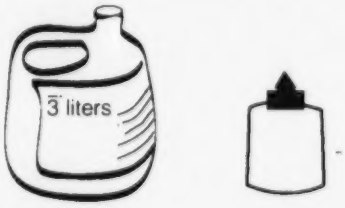
   How many total grams of fat are in one serving of the crackers?

   (1) 4
   (2) 4.5
   (3) 9
   (4) 54
   (5) 504

5. The trim on a shed consists of 8 boards, each 90 centimeters in length. What is the total length of the boards in meters?

   (1) 0.72
   (2) 0.9
   (3) 7.2
   (4) 9.8
   (5) 11.25

6. A large bottle contains 3 liters of white glue. A worker pours 710 mL (about 24 fluid ounces) into a smaller bottle. How many liters of glue are left in the larger bottle?



   (1) 0.6
   (2) 1.25
   (3) 2.13
   (4) 2.29
   (5) 4.1

Answers start on page 42.

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STRATEGY 3 Use the Calculator with Measurement Problems

To enter two-part measurements (for example—feet and inches) on a calculator, you must convert the smaller unit (inches). You can convert it to a fraction using the **fraction key** on the Casio *fx*-260 calculator. You can also enter measurements using decimals. For example, to enter $2\frac{1}{2}$ feet, you can enter 2.5.

EXAMPLE: Find the total of 3 ft 9 in and 4 ft 5 in.

THINK: I can use a calculator to represent measurements as fractions.

Step 1: Since 1 foot equals 12 inches, I can write 9 inches as $\frac{9}{12}$ foot and 5 inches as $\frac{5}{12}$ foot. To enter mixed numbers on the Casio *fx*-260, use the fraction key. For example, enter $3\frac{9}{12}$ as 3 a b/c 9 a b/c 12.

Step 2: Enter: 3 a b/c 9 a b/c 12 + 4 a b/c 5 a b/c 12 = 8 ⌟1 ⌟16.
The total is $8\frac{1}{6}$ ft. Since $\frac{1}{6}$ of 12 inches is 2 inches, $8\frac{1}{6}$ ft = 8 ft 2 in.

SOLUTION: The total is **8 feet 2 inches.**

GED Problem 1

Candice has to mail five packages. Each package weighs 1 lb 4 oz. What is the total weight in pounds?

(1) 5.2
(2) $5\frac{1}{4}$
(3) 6
(4) $6\frac{1}{4}$
(5) 7

THINK: I need to multiply 1 lb 4 oz by 5. I will use the fact 1 pound = 16 ounces to multiply $1\frac{4}{16} \times 5$.

Using the fraction key: 1 a b/c 4 a b/c 16 × 5 = 6 ⌟1 ⌟4

Using decimals: I know that $\frac{4}{16} = \frac{1}{4} = 0.25$, so 1 lb 4 oz = 1.25 lb. $1.25 \times 5 =$ 6.25

ANSWER: (4) $6\frac{1}{4}$

GED Problem 2

Express 126 inches in feet and inches.

(1) 7 ft 8 in
(2) 9 ft 3 in
(3) 10 ft 4 in
(4) 10 ft 6 in
(5) 10 ft 8 in

THINK: Since 1 foot = 12 inches, I should divide 126 by 12.
Step 1: Press: 126 ÷ 12 = 10.5
Step 2: The whole number 10 is the number of feet. The decimal represents the smaller unit: .5 is $\frac{1}{2}$ foot or 6 inches.

ANSWER: (4) 10 ft 6 in

TESTWISE ① ② ③ ④ ⑤

The examples show using the fraction key twice with mixed numbers. Use it only once with fractions—for example, enter $\frac{1}{4}$ as 1 a b/c 4.

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Apply the Strategy

Directions: Solve these problems with a calculator. For problems 1–3, first decide whether to use fractions or decimals on the calculator to work the problem.

1. James repairs computer equipment. On Monday he spent 1 hr 45 min on his first job, 1 hr 30 min on his second job, and 2 hr 45 min on his third job. How long did it take him to complete the three jobs?

   (1) 4 hr 20 min
   (2) 5.2 hr
   (3) 5 hr 15 min
   (4) 6 hr
   (5) 6 hr 30 min

   Fractions or Decimals? _____

   Answer: _____

2. A bottle holds 2 cups 5 fluid ounces of tomato juice. Marilyn bought five bottles. How much tomato juice did she buy?

   (1) 13 c 1 fl oz
   (2) 12 c 5 fl oz
   (3) 12 c 4 fl oz
   (4) 12 c 1 fl oz
   (5) 11 c 5 fl oz

   Fractions or Decimals? _____

   Answer: _____

3. How many 8-ounce packages of cookies can be made from 12 pounds of cookies?

   (1) 4
   (2) 12
   (3) 18
   (4) 24
   (5) 96

   Fractions or Decimals? _____

   Answer: _____

4. A small company ordered 15 gift boxes for its employees. If each gift box weighs 5 pounds 12 ounces, how many total pounds do the gift boxes weigh?

   (1) 60
   (2) $76\frac{4}{5}$
   (3) $78\frac{3}{4}$
   (4) $86\frac{1}{4}$
   (5) 900

5. Express 83 feet in yards and feet.

   (1) 27 yd
   (2) 27 yd 2 ft
   (3) 29 yd
   (4) 29 yd 2 ft
   (5) Not enough information is given.

6. How many cartons, each 1 foot 3 inches high, can be stacked in a space that is 16 feet high?

   (1) 9
   (2) 11
   (3) 12
   (4) 13
   (5) 15

7. Two pieces of electrical wire measuring 8 feet 9 inches and 12 feet 6 inches are cut from a 50-foot length. What is the length of the remaining piece of wire?

   (1) 28 ft 5 in
   (2) 28 ft 7 in
   (3) 28 ft 9 in
   (4) 29 ft 5 in
   (5) 29 ft 9 in

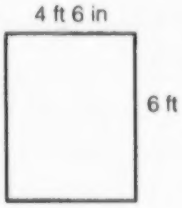
Answers start on page 42.

STRATEGY 4 Use Diagrams in Measurement Problems

Many GED measurement problems will refer to some kind of **diagram.** Diagrams are used to represent the objects or structures described in a problem. Many diagrams are drawn as though you were looking at the object from above. However, diagrams may not be drawn to **scale.** Don't assume a line has a long measurement simply because it looks long. Use the information in the problem to draw correct conclusions.

Labels show the lengths of sides or the distances between points on the diagram. If a side or distance is not labeled, look for some other way to find the measurement. You may be able to find the missing measurement using the measurements that are given. Sometimes a measurement is stated in the words of the problem. If it isn't possible to determine a measurement, you should choose option (5) Not enough information is given.

EXAMPLE: A rectangular garden has the dimensions shown in the diagram. Carol wants to put a low cedar fence around the edge of the garden. How many feet of fencing will she need?



THINK: I need to add the four sides to find the total fencing.

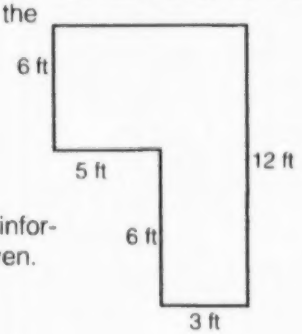
Step 1: Find the missing sides. The diagram shows the measures of only two sides. However, since the garden is a rectangle, the opposite sides of the garden have equal measurements.

Step 2: Add. 4 ft 6 in + 4 ft 6 in + 6 ft + 6 ft = 21 ft

SOLUTION: Carol will need **21 feet** of fencing to enclose the garden.

GED Problem

A concrete slab has the measurements shown in the diagram. What is the distance, in feet, around the edge of the slab?



(1) 40
(2) 32
(3) 20
(4) 16
(5) Not enough information is given.

THINK: I can see that the long edge (12 ft) is equal in length to the sum of its two opposite sides (6 ft + 6 ft). To find the missing side, I can find the sum of its opposite sides.

Step 1: Find the missing measure:
3 + 5 = 8 ft

Step 2: Add to find the distance around the edge of the slab:
12 + 3 + 6 + 5 + 6 + 8 = 40 ft

ANSWER: (1) 40

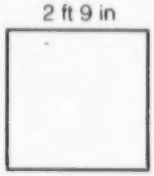
TESTWISE
① ② ③ ④ ⑤

If a problem describes a structure but doesn't include a diagram, draw your own diagram. Your drawing doesn't have to be perfect. Simply sketch the basic shapes, and write the labels given in the problem.

Apply the Strategy

Directions: Solve the problems below. For problems 1 and 3, first label the unmarked sides using information from the problem. For problem 2, first draw a diagram to illustrate the problem.

1. A carpenter wants to put a hardwood border around the edge of the square tabletop shown below. What is the total distance around the edge of the tabletop?



(1) 5 ft 6 in
(2) 8 ft 3 in
(3) 8 ft 9 in
(4) 11 ft
(5) 14 ft

Answer: _____

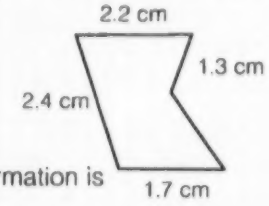
2. The distance from Janice's home to her work is 15.4 miles. On the way to work, she drops her daughter off at a daycare center that is 2.8 miles from home. How many miles is it from the daycare center to work?

(1) 12.6
(2) 13.4
(3) 17.12
(4) 18.2
(5) Not enough information is given.

Draw a Diagram:

Answer: _____

3. A company logo is a five-sided figure as shown in the diagram below. The unmarked side is equal in measure to the bottom edge of the logo. What is the distance around the logo in centimeters?

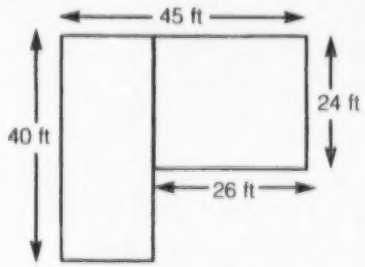


(1) 7.6
(2) 9.3
(3) 9.8
(4) 10.0
(5) Not enough information is given.

Answer: _____

Problems 4 and 5 refer to the information below.

A conference hall consists of two rectangles joined as shown. The shaded portion of the hall is carpeted.



4. What is the distance, in feet, around the carpeted portion of the hall?

(1) 50
(2) 74
(3) 95
(4) 100
(5) 135

5. What is the distance, in feet, around the entire conference hall?

(1) 78
(2) 85
(3) 135
(4) 156
(5) 170

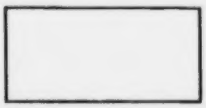
6. The height of a rectangular doorway is 7 feet 6 inches. The width of the doorway is 3 feet 4 inches. A carpenter wants to put molding around the sides and top of the doorway. What is the total length of molding needed?

(1) 10 ft 10 in
(2) 18 ft 4 in
(3) 21 ft 8 in
(4) 23 ft
(5) 26 ft 8 in

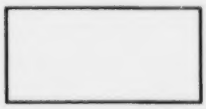
Answers start on page 42.

STRATEGY 5 Solve Perimeter, Area, and Volume Problems

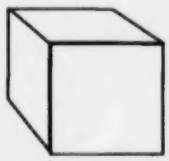
Perimeter is the distance around a figure. You find the perimeter when you figure out what length of wood you need to make a frame for a picture or build a fence around a yard. To find the perimeter of any figure, *add the lengths of the sides.*



Area is the measure of the space inside a flat figure. Area is measured in **square units.** If the sides of a figure are measured in feet, the area will be measured in square feet. To find the area of a rectangle, *multiply the length by the width.* You find area when you figure out how many square yards of carpet you need to cover a floor.



Volume is the measure of the space inside a three-dimensional object. Volume is measured in **cubic units,** such as cubic feet or cubic inches. Imagine a box that measures one foot on each edge (we say the box is one cubic foot). You could measure the volume of a closet by figuring out how many of the boxes would fit in the space. To find the volume of a rectangular container (a box shape), *multiply length by width by height.*



Most GED math problems involve real-life situations. Think about the situation described in the problem to decide whether to find the perimeter, area, or volume.

EXAMPLE: Jim plans to buy the storage crate shown in the diagram. How much space does the crate have for storage?

THINK: Jim plans to fill the space inside the crate, so I need to find the volume of the crate. Since the crate has a box shape, I can find volume by multiplying length by width by height.

Multiply: 3 ft × 2 ft × 4 ft = 24 cubic feet

SOLUTION: The storage unit has **24 cubic feet** of space inside.

GED Problem

Mitchell plans to tile a kitchen floor. Before he buys the tiles, he needs to measure the floor space. If the rectangular room is 28 ft by 16 ft, what is the measure of the space in square feet?

(1) 44
(2) 328
(3) 368
(4) 428
(5) 448

THINK: The room is in the shape of a rectangle, and the situation is about covering the space. I need to solve for area.

Step 1: Find the length and width. These dimensions are stated in the question. The length is 28 feet, and the width is 16 feet.

Step 2: Multiply: 28 × 16 = 448 square feet

ANSWER: (5) 448

TESTWISE ① ② ③ ④ ⑤

If you aren't sure whether to solve for area or volume, review the question asked. If the question directs you to find the answer in square units, you should find the area. If you are asked to find cubic units, solve for the volume.

Apply the Strategy

Directions: Solve the problems below. For problems 1–3, first decide what type of measure you are asked to find. Write *perimeter, area,* or *volume.*

1. A real estate agency is trying to sell a square lot of land. One side of the lot measures 52 yards. What is the measure of the space in square yards?

   (1) 208
   (2) 2,704
   (3) 10,816
   (4) 140,608
   (5) Not enough information is given.

   Type of Measure: _____

   Answer: _____

2. Bea plans to use blue satin ribbon to edge a quilt she is making. The quilt is in the shape of a rectangle and measures 8 ft by 9 ft. How many feet of ribbon will Bea need to go around the edge of the quilt?

   (1) 72
   (2) 68
   (3) 36
   (4) 34
   (5) 17

   Type of Measure: _____

   Answer: _____

3. A cereal box is 7 inches across the front. The side panel is 3 inches wide, and the height of the box is 12 inches. What is the measure of the space inside the box in cubic inches?

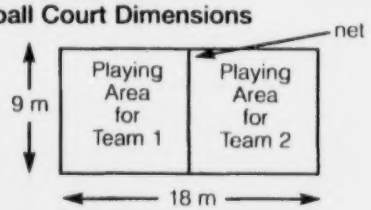
   (1) 40
   (2) 87
   (3) 122
   (4) 141
   (5) 252

   Type of Measure: _____

   Answer : _____

Problems 4 and 5 refer to the following diagram.

Volleyball Court Dimensions



4. A city league plans to resurface the entire volleyball court. The league finds that the cost of the job will be $5 per square meter. What total amount should the job cost?

   (1) $270
   (2) $810
   (3) $1350
   (4) $1620
   (5) $3645

5. A white stripe will be painted around the outside of the volleyball court. What is the length of this line in meters?

   (1) 27
   (2) 36
   (3) 54
   (4) 72
   (5) 81

6. At the gym, the front of a locker is 1 foot wide and 4 feet in height. The depth of the locker is $3\frac{1}{2}$ feet. How many cubic feet of space will the locker hold?

   (1) $8\frac{1}{2}$
   (2) $12\frac{1}{2}$
   (3) 14
   (4) 17
   (5) Not enough information is given.

Answers start on page 42.

STRATEGY 6 Use the Formulas Page with Set-up Problems

In a **set-up problem,** the answer choices are expressions showing possible ways of working the problem. Your task is to choose the correct expression. Formulas can help you do this. To use the formulas, substitute the numbers given in the problem for the words in the formula. Then compare your expression to the answer choices.

When you take the GED Math Test, you will be given a **formulas page** that lists the formulas in words. Some of the formulas are shown below and on the next page.

AREA of a:		
square	Area = side^2	$A = s^2$
rectangle	Area = length × width	$A = lw$
parallelogram	Area = base × height	$A = bh$
triangle	Area = $\frac{1}{2}$ × base × height	$A = \frac{1}{2}bh$
trapezoid	Area = $\frac{1}{2}$ × (base$_1$ + base$_2$) × height	$A = \frac{1}{2}(b_1 + b_2)h$
circle	Area = π × radius^2; π is approximately equal to 3.14	$A = \pi r^2$

EXAMPLE: The base of a triangle is 4 inches. The height of the triangle is 5 inches. Which expression can be used to find the area of the triangle?

THINK: I can use the formulas page to write an expression.

Step 1: Find the formula. The formulas page states: Area = $\frac{1}{2}$ × base × height.

Step 2: Substitute: Area = $\frac{1}{2} \times 4 \times 5$

SOLUTION: The expression $\frac{1}{2} \times \mathbf{4} \times \mathbf{5}$ could be used to find the area of the triangle.

GED Problem

The can of peanuts (shown below) is 4 inches in height. If the radius of the can is 2 inches, which of the expressions below can be used to find its volume?

(1) $\pi \times 2 \times 4$
(2) $\pi \times 2^2 \times 4$
(3) $\pi \times 4^2 \times 2$
(4) $2 \times 2 \times 4$
(5) $4 \times 4 \times 2$

THINK: The can is a cylinder because the top and the bottom are circles of the same size. I can use the formula for finding the volume of a cylinder.

Step 1: Look in the group of formulas for volume on page 13. The formula for the volume of a cylinder is *Volume* = π × *radius*^{2} × *height*. The π symbol stands for pi.

Step 2: Substitute the known values: radius = 2 and height = 4. Volume = $\pi \times 2^2 \times 4$. Compare to the answer choices.

ANSWER: (2) $\pi \times 2^2 \times 4$

TESTWISE
① ② ③ ④ ⑤

You can change the order that you add or multiply numbers without changing the result. If your answer doesn't match an option exactly, see whether it will match if you add or multiply in a different order.

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Apply the Strategy

Directions: Choose the correct expression for the problems below. For problems 1 and 2, first write the formula you will need to solve the problem. You may also use the formulas on page 12.

PERIMETER of a:		
square	Perimeter = 4 × side	$P = 4s$
rectangle	Perimeter = 2 × length + 2 × width	$P = 2l + 2w$
triangle	Perimeter = $side_1 + side_2 + side_3$	$P = a + b + c$
CIRCUMFERENCE of a circle		
	Circumference = $\pi \times$ diameter	$C = \pi d$
VOLUME of a:		
cube	Volume = $edge^3$	$V = e^3$
rectangular container	Volume = length × width × height	$V = lwh$
square pyramid	Volume = $\frac{1}{3} \times (\text{base edge})^2 \times \text{height}$	$V = \frac{1}{3}b^2h$
cylinder	Volume = $\pi \times radius^2 \times$ height	$V = \pi r^2 h$
cone	Volume = $\frac{1}{3} \times \pi \times radius^2 \times$ height	$V = \frac{1}{3}\pi r^2 h$

1. Pam has built a raised flowerbed. The base and the sides of the bed are rectangles. The flowerbed is 6 feet long and 3 feet wide. If the bed is 2 feet high, which of the following expressions could be used to find the number of cubic feet of soil needed to fill it?

   (1) $2 \times 6 + 2 \times 3$
   (2) $6 + 3 + 2$
   (3) $6 \times 3 \times 2$
   (4) $\frac{1}{2} \times (6 + 3) \times 2$
   (5) $\pi \times 3^2 \times 6$

   Formula: _____

   Answer: _____

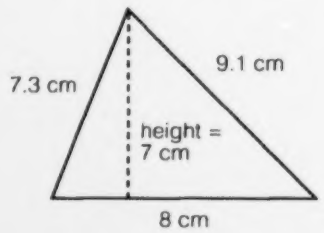
2. The city is installing a rectangular pond that will be 25 feet long, 22 feet wide, and 2 feet deep. The city has hired an artist to paint a mural on the bottom of the pond. Which of the following expressions could the artist use to find the surface area, in square feet, that the painting will cover?

   (1) $2 \times (25 + 22)$
   (2) $25 \times 22 \times 2$
   (3) $2 \times 25 + 2 \times 22$
   (4) 25×22
   (5) $25 \times (2 + 22)$

   Formula: _____

   Answer: _____

3. The diagram below gives the measurements of the three sides of a triangle and the measure of its height.



   Which of the following expressions could be used to find the distance around the triangle?

   (1) $\frac{1}{2} \times 8 \times 7$
   (2) $\frac{1}{2} \times 8 \times 7.3$
   (3) $\frac{1}{2} \times 8 \times 9.1$
   (4) $2 \times 8 + 2 \times 7$
   (5) $7.3 + 9.1 + 8$

4. A box measures 2 feet on each side. Which of the following expressions could be used to find the volume of the box in cubic feet?

   (1) 2^3
   (2) 2×2
   (3) $2 + 2 + 2$
   (4) 3×2
   (5) $2 + (2 \times 2)$

Answers start on page 43.

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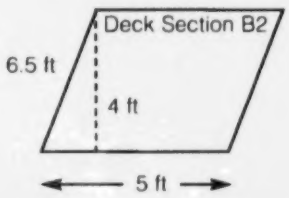
STRATEGY 7 Use Formulas to Solve Problems

Formulas can make it easier to remember what operations to use to solve problems. Substitute the values given in the problem for the words in the formula. Then complete the operations to find an answer. Remember to use the **order of operations:** (1) parentheses, (2) exponents, (3) multiplication or division from left to right, and (4) addition or subtraction from left to right.

Although formulas make it easier to figure out how to solve a problem, they cannot take the place of common sense. Always ask yourself whether your answer makes sense.

EXAMPLE: On a blueprint, a section of a deck is in the shape of a parallelogram. Aaron needs to find the area of this section (shown to the right). Using the measurements on the diagram, what is the area of the section in square feet?



THINK: I can use the formula for finding the area of a parallelogram from the GED formulas page.

Step 1: Find the formula. (The measurement formulas are shown on pages 12–13 of this book.) Area = base × height.

Step 2: The height is the dotted line from the base to one corner of the figure. (The height must always be perpendicular to the base.) The height = 4 ft, and the base = 5 ft. Ignore the side measure. Substitute the values into the formula and solve.

Area = base × height
= 5 × 4
= 20 sq ft

SOLUTION: The area of the section is **20 square feet.**

GED Problem

In baseball, the pitcher's mound is in the shape of a circle. If the diameter of the pitcher's mound is 18 ft, what is its circumference to the nearest foot?

(1) 28
(2) 57
(3) 113
(4) 254
(5) 1017

THINK: Circumference is the distance around a circle.

Step 1: The formula for finding the circumference of a circle is Circumference = π × diameter.

Step 2: Substitute and solve. On the GED Math Test, always use 3.14 for π (pi).

Circumference = π × diameter
= 3.14 × 18
= 56.52 feet

Step 3: Round: 56.52 rounds to 57 feet.

ANSWER: (2) 57

TESTWISE
① ② ③ ④ ⑤

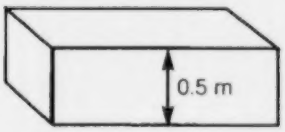
Use the value 3 for π (pi) to estimate the value of a formula. For example, you can estimate the answer to 3.14 × 18 by multiplying 3 × 20.

Apply the Strategy

Directions: Solve the problems below. For problems 1–3, first write the formula you will use to solve the problem. Use the formulas on pages 12–13.

1. To protect a motor from water damage, the motor is installed on a concrete block (shown below). The block is 2 meters long and 1.8 meters wide. Using the height shown in the diagram, what is the volume of the concrete block in cubic meters?

   (1) 0.9
   (2) 1.8
   (3) 3.3
   (4) 3.6
   (5) 4.3



   Formula: _____

   Answer: _____

2. To begin a painting, an artist stretches a piece of canvas over a rectangular wood frame. The frame is 26 by 30 inches. What is the surface area of the canvas in square inches?

   (1) 780
   (2) 676
   (3) 168
   (4) 112
   (5) Not enough information is given.

   Formula: _____

   Answer: _____

3. A cone-shaped container has a height of 12 inches. If the radius of the circular base of the cone is 3 inches, what is the measure of the space inside the cone to the nearest cubic inch?

   (1) 38
   (2) 47
   (3) 113
   (4) 339
   (5) 565

   Formula: _____

   Answer: _____

4. A surveyor determines that a rectangular piece of land measures 110 ft by 84 ft. If a fence is built around the land, how many feet of fencing will be needed?

   (1) 194
   (2) 304
   (3) 278
   (4) 388
   (5) 9240

5. A hole in the shape of a cylinder is bored into a wood block using a special drill. If the radius of the hole is 2 inches and its depth is 6 inches, what is the volume of the hole to the nearest cubic inch?

   (*Hint:* Think of the depth of the hole as the height of a cylinder.)

   (1) 226
   (2) 75
   (3) 38
   (4) 24
   (5) 13

6. The rectangular floor of an empty room measures 20 by 15 feet. An air conditioner takes about 4 minutes to cool 100 cubic feet of space. If the ceiling is 10 feet from the floor, how many minutes will it take to cool the room?

   (1) 30
   (2) 120
   (3) 300
   (4) 400
   (5) 12,000

Answers start on page 43.

STRATEGY 8 Grid In Answers to Measurement Problems

You may be expected to grid in the answer to a measurement problem on the GED Math Test. The **grids** are designed to hold only one number. That means any measurement with more than one unit must be converted to the measurement unit stated in the question.

In general, remember these rules:

- Write your answer in the boxes at the top of the grid.
- Fill in only one circle per column.
- Numbers must fit within the five-column format of the grid.
- You can start your answer in any column.
- You cannot enter mixed numbers in the grid. Change mixed numbers to improper fractions.

EXAMPLE: Monica bought 4 pounds of ground beef. If she uses 1 pound 8 ounces to make a meatloaf, how many pounds of ground beef will she have left?

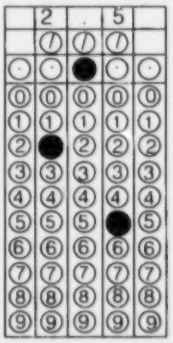
Mark your answer in the circles in the grid.

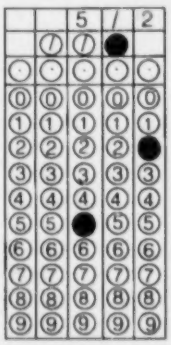
THINK: There are 16 ounces in 1 pound, so 1 lb 8 oz equals 1.5, or $1\frac{1}{2}$ lb.

Step 1: Subtract: $4 - 1.5 = 2.5$ lb or $4 - 1\frac{1}{2} = 2\frac{1}{2}$ lb.

Step 2: Fill in the grid.

SOLUTION: There are **2.5 lb,** or **$2\frac{1}{2}$ lb,** left over. Two ways to record the answer are shown. Notice that $2\frac{1}{2}$ must be changed to the improper fraction $\frac{5}{2}$ before you can record it in the grid.





Both grids represent the same value.

GED Problem

Each side of a square tile measures 1 ft 4 in. What is the area of the tile in square inches?

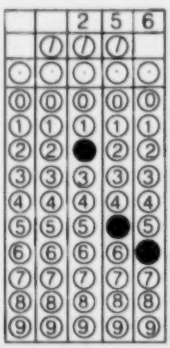
Mark your answer in the circles in the grid.

THINK: I know 1 ft = 12 in. Since the answer must be in square inches, I will work the problem using inches.

Step 1: 1 ft 4 in = 16 in

Step 2: Use the formula: Area = side^2. $16^2 = 16 \times 16 = 256$ sq in

ANSWER: One way to mark the grid is shown to the right.



TESTWISE
① ② ③ ④ ⑤

Use estimation on grid-in questions to see whether your answer is reasonable.

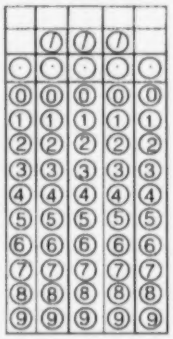
Apply the Strategy

Directions: Solve the problems below, reading carefully for the unit of the answer. Grid in your answers. For problems 1–3, first write the unit of your answer. Use formulas from pages 12–13 as needed.

1. A floorboard is $2\frac{1}{2}$ inches wide. A carpenter has 72 floorboards. If she places the boards side by side, how many feet of floor can she cover?

   Mark your answer in the circles in the grid.

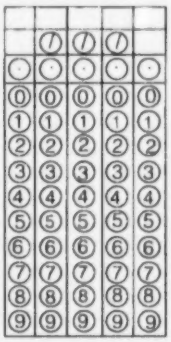
   Unit of Measure: _____



2. A rectangular painting is 1.2 meters by 90 centimeters. What is the perimeter of the painting in meters?

   Mark your answer in the circles in the grid.

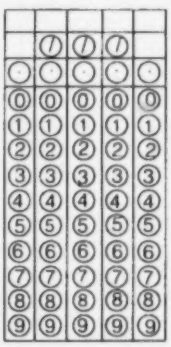
   Unit of Measure: _____



3. A bread recipe calls for $2\frac{3}{4}$ cups of milk. If you triple the recipe, how many cups of milk will you need?

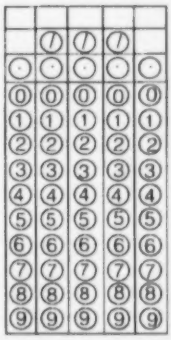
   Mark your answer in the circles in the grid.

   Unit of Measure: _____



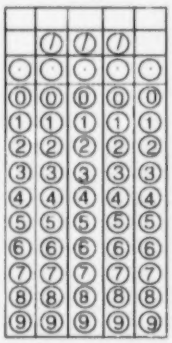
4. Each capsule of a cold medication contains 500 milligrams of medicine. How many grams of the medicine are contained in a bottle of 90 capsules?

   Mark your answer in the circles in the grid.



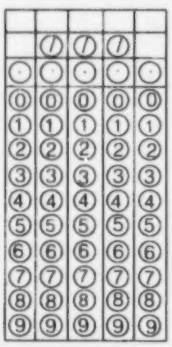
5. A telephone post measures 6 yd 2 ft in length. If a $12\frac{1}{2}$-foot section is cut from the top of the post, how long will the remaining piece be in feet?

   Mark your answer in the circles in the grid.



6. At a grocery store, the average time it takes for each customer to go through the checkout line is 7 minutes. At that rate, how many hours will it take for 45 customers to go through the checkout line?

   Mark your answer in the circles in the grid.



Answers start on page 43.

GED Practice 1: Measurement and Formulas

Part I: You may use a calculator. Refer to the formulas on pages 12–13 as needed.

For questions 1–4, choose the one best answer. Fill in the grid for question 5.

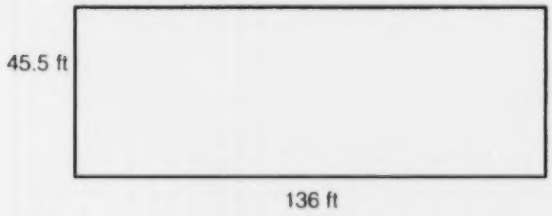
1. Ruth takes an average of 20 minutes to give a haircut. At that rate, how long will it take her to give 8 haircuts?

   (1) 2 hr
   (2) 2 hr 20 min
   (3) 2 hr 40 min
   (4) 3 hr
   (5) 3 hr 30 min

2. A steamer trunk is 2 feet wide, 3 feet long, and $1\frac{1}{2}$ feet deep. How many cubic feet of space does the trunk hold?

   (1) 3
   (2) 6
   (3) $6\frac{1}{2}$
   (4) 9
   (5) Not enough information is given.

3. The drawing below shows the measurements of a children's rectangular playground.



   If a fence is installed around the playground to secure the area at night, how many feet of fencing are needed?

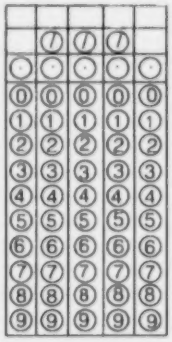
   (1) 91
   (2) 181.5
   (3) 227
   (4) 272
   (5) 363

4. How many 8-ounce packages of cream cheese can be made from 3 pounds of cream cheese?

   (1) 2.25
   (2) 6
   (3) 11
   (4) 24
   (5) 48

5. Angela wants to turn an ordinary tablecloth into a holiday tablecloth by edging it with a seasonal border. If the area of the square tablecloth is 25 square feet, how many feet of border does Angela need?

   Mark your answer in the circles in the grid.



Part II: You may not use a calculator. Refer to the formulas on pages 12–13 as needed.

For questions 6–9, choose the one best answer. Fill in the grid for question 10.

6. A rectangular food container measures 6 inches by 6 inches by 2.5 inches. Which of the following expressions could be used to find the volume of the container in cubic inches?

   (1) 6^2
   (2) 6×2.5
   (3) $6 + 6 + 2.5$
   (4) $6 \times 6 \times 2.5$
   (5) $2 + (6 \times 6)$

7. The nutrition facts on a container of soy beverage give the following information:

Serving Size: 240 milliliters
Saturated Fat: 500 milligrams
Polyunsaturated Fat: 2 grams
Monounsaturated Fat: 1 gram

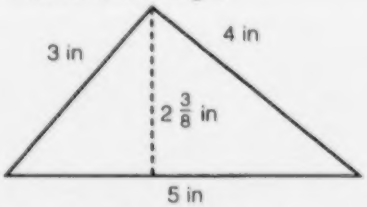
   How many total grams of fat are in one serving of the soy beverage?

   (1) 3
   (2) 3.5
   (3) 260
   (4) 503
   (5) 800

8. Mario purchased self-adhesive caulking to help insulate a doorway. If the doorway measures 6 feet 8 inches high and 3 feet wide, how much caulking will he need to insulate both sides and the top of the doorway?

   (1) 3 ft
   (2) 6 ft 8 in
   (3) 9 ft 8 in
   (4) 16 ft 4 in
   (5) 19 ft 4 in

9. The diagram below shows the measurements of a triangle.

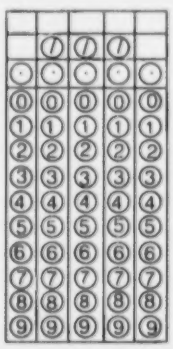


   Which of the following expressions could be used to find the distance around the triangle?

   (1) $\frac{1}{2} \times 4 \times 3$
   (2) $\frac{1}{2} \times 5 \times 2\frac{3}{8}$
   (3) $\frac{1}{2}(3 \times 4 \times 5)$
   (4) $4^2 + 3^2$
   (5) $3 + 4 + 5$

10. A group of local citizens want a 4-way stop sign put in at a busy intersection. The group estimates that about 50 cars pass through the intersection every 5 minutes. At that rate, how many cars pass through the intersection in 1 hour?

    Mark your answer in the circles in the grid.



Answers start on page 43.

Evaluation and Action Plan

Check your answers. Then evaluate your results and make a plan.

Results:
- ☐ Five or fewer correct • *Need to study more*
- ☐ Six to eight correct • *Need to review*
- ☐ Nine to ten correct • *Ready to move on*

I need to work more on:
- ☐ Measurement (Questions 1, 4, 7, 10)
- ☐ Formulas (Questions 2, 3, 5, 6, 8, 9)
- ☐ Calculator skills (Questions 1–5)
- ☐ Filling in grids (Questions 5, 10)

STRATEGY 9 Use Tables and Charts

Tables and **charts** arrange **data** in columns and rows. Use row and column labels to help you understand how the data is organized. A table or chart holds more information than you need. To find a fact, find the place where the row and column meet.

Window Shutters (12-inch width)

Length (inches)	Weight per Set (pounds)	Price per Set	Price Each for 2 or More Sets
24–29	4.0	$25.99	$18.75
30–35	4.8	$27.99	$20.35
36–41	5.7	$30.50	$22.80
42–47	6.6	$35.50	$26.50
48–53	7.5	$39.99	$29.99

EXAMPLE: Window Warehouse sells custom-made shutters. A customer wants to order one set of shutters that are 45 inches in length. What will the store charge for the set?

THINK: I will use the length that the customer wants to order to find the price per set.

Step 1: Understand how the table is organized. Read the column labels. The first column shows various lengths of shutters. Scan down this column to find the row marked 42–47. Since 45 inches falls between 42 and 47, this is the correct row.

Step 2: Find the data. Follow across the row marked 42–47 until you come to the column labeled "Price per Set." The box where the row and column meet has the fact you need.

SOLUTION: The store will charge the customer **$35.50** for one set of 45-inch shutters.

GED Problem

Pat wants to buy an A500 aquarium. If Pat decides to finance her purchase over 12 months, how much will she pay in all?

Deluxe Aquariums (prices include sales tax)

Model	Price	Monthly Payment (12 months)
A400	$450	$43.13
A500	$650	$62.30
A600	$825	$79.06
A700	$1080	$103.50

(1) $43.13
(2) $62.30
(3) $650.00
(4) $747.60
(5) $948.72

THINK: Find the monthly payment for the A500.

Step 1: Go down the Model column to A500. Follow across to the monthly payment: $62.30.

Step 2: Multiply by the number of payments. $62.30 × 12 = $747.60

ANSWER: (4) $747.60

TESTWISE ① ② ③ ④ ⑤

In problems based on tables, the wrong answer choices are often based on selecting the wrong numbers to solve a problem. Check to make sure that you selected the correct numbers before you perform any calculations.

Apply the Strategy

Directions: Solve the following problems. For problems 1–3, first write the facts from the table or chart that you will need to solve the problem.

Problems 1 and 2 refer to the Window Shutters table on page 20.

1. How much will a customer pay for three sets of 36-inch shutters?

   (1) $61.05
   (2) $68.40
   (3) $79.50
   (4) $91.50
   (5) Not enough information is given.

   Facts from Table: _____

   Answer: _____

2. The Baskins want to buy six sets of shutters. Four sets need to be 34 inches in length and two sets must be 50 inches. What is the total weight, in pounds, of their order?

   (1) 12.3
   (2) 34.2
   (3) 36.9
   (4) 39.6
   (5) 84.0

   Facts from Table: _____

   Answer: _____

Problem 3 refers to the Deluxe Aquariums table on page 20.

3. A doctor pays cash for an A600 aquarium for her waiting room. If the doctor has $3567 in her business checking account, how much will she have left in her account after she writes a check for the aquarium?

   (1) $2618
   (2) $2742
   (3) $2967
   (4) $3488
   (5) $4392

   Facts from Table: _____

   Answer: _____

Problems 4–6 refer to the table below.

Calories Burned per Hour of Exercise by Body Weight

	Weight of Person		
Exercise	**110 lb**	**155 lb**	**200 lb**
Running			
8-min mi	550	700	850
12-min mi	515	655	795
Swimming			
45 yd/min	540	690	835
30 yd/min	330	420	510
Walking			
5 mi/hr	435	555	675
3 mi/hr	235	300	365

4. Kim weighs close to 155 pounds. She walks 30 minutes a day. She estimates her pace is about 3 miles per hour. How many calories does she burn during the half hour?

   (1) 77.5
   (2) 90.0
   (3) 100.0
   (4) 150.0
   (5) 300.0

5. Eu So weighs about 200 pounds. Which of the following types of exercise would help him burn the most calories in one hour?

   (1) walking at a rate of 5 mi per hr
   (2) walking at a rate of 3 mi per hr
   (3) swimming at a rate of 45 yd per min
   (4) running at a rate of 12 min per mi
   (5) running at a rate of 8 min per mi

6. Alice weighs 110 pounds. How many calories will she burn if she swims for 45 minutes at a rate of 45 yards per minute?

   (1) 135
   (2) 246
   (3) 405
   (4) 518
   (5) 540

Answers start on page 43.

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STRATEGY 10 Work with Bar Graphs

A **bar graph** uses bars to represent numbers. By comparing the lengths of the bars, you can easily compare quantities and draw conclusions about the data. To make sure that you understand a bar graph, you should read the title, the bar labels, the number scale, and the key. Always read the scale carefully so that you know what the numbers represent.

To find the value of a bar, follow across from the top of the bar to the scale. If the height of the bar falls between two scale markings, estimate the value of the bar.

EXAMPLE: Nu-Style Clothiers has been in business for five years. The company has two stores. About how many employees worked at Store 2 in the fifth year of business?

THINK: I need to find the value of the bar for Store 2 in Year 5.

Step 1: Read the graph. Each pair of bars represents the number of employees during one year of business. The key states that the shaded bars represent Store 2. Find the shaded bar above the label Year 5.

Step 2: Find the value of the bar. Read across from the bar to the scale. The scale represents the number of employees. The bar falls between the numbers 35 and 40. Since the bar seems close to 35, either 36 or 37 would be a good estimate for the value of the bar.

SOLUTION: About **36 employees** worked at Store 2 in the fifth year of business.

GED Problem

About how many more employees worked at Store 1 in Year 4 than in Year 2?

(1) 10
(2) 13
(3) 15
(4) 18
(5) 23

THINK: I will find the values of the two bars for Store 1 and subtract to find the difference.

Step 1: Read the bars. Since the problem is about Store 1, use the unshaded bars. In Year 2, the unshaded bar reaches 25 on the scale. In Year 4, the unshaded bar falls between 35 and 40. Since it seems to be a little more than halfway between 35 and 40, 38 is a good estimate.

Step 2: Subtract. 38 – 25 = 13 employees

ANSWER: (2) 13

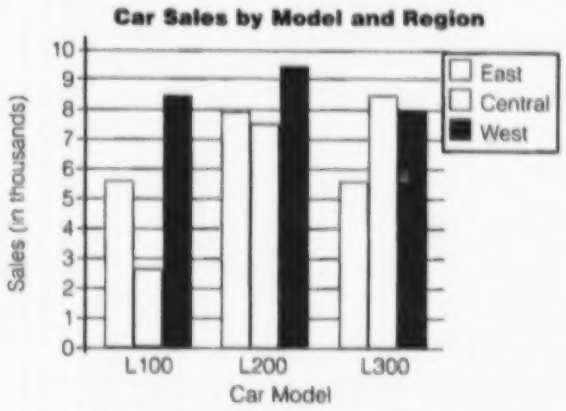
TESTWISE ① ② ③ ④ ⑤

Make sure you don't misread the value of a bar. Lay your pencil sideways on the graph, and use the edge to guide your eyes from the top of a bar to the scale markings.

Apply the Strategy

Directions: Solve the following problems. For problems 1 and 2, first write estimates for the values of the bars you will need to solve the problem.

Problems 1–4 refer to the following graph.



1. In the western region, about how many more L200 models were sold than L100 models?

   (1) 1
   (2) 10
   (3) 100
   (4) 1,000
   (5) 10,000

   Estimates of Bars: _____

   Answer: _____

2. The number of L300s sold in the eastern region was approximately what percent of the L300s sold in the western region?

   (1) 55%
   (2) 70%
   (3) 80%
   (4) 145%
   (5) Not enough information is given.

   Estimates of Bars: _____

   Answer: _____

3. In the central region, what is the approximate ratio of car sales of L300s to car sales of L100s?

   (1) 1:3
   (2) 3:2
   (3) 2:3
   (4) 2:1
   (5) 3:1

4. About how many cars of all three models were sold in the eastern region during the time period shown on the graph?

   (1) 13,000
   (2) 16,000
   (3) 19,000
   (4) 22,000
   (5) 25,000

Problems 5 and 6 refer to the Nu-Style Clothiers graph on page 22.

5. In which year did Store 2 have more employees than Store 1?

   (1) Year 1
   (2) Year 2
   (3) Year 3
   (4) Year 4
   (5) Year 5

6. For Store 2, what is the ratio of employees in Year 2 to employees in Year 4?

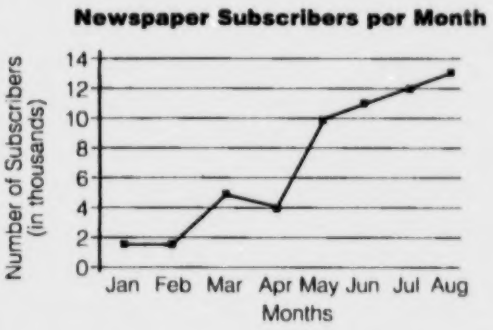
   (1) 5:8
   (2) 2:3
   (3) 3:5
   (4) 4:7
   (5) 1:2

Answers start on page 43.

STRATEGY 11 Work with Line Graphs

Line graphs often show changes over time. Most line graphs have two scales. The vertical scale is similar to the scale on a bar graph. The horizontal scale usually shows time intervals. Points are plotted on the graph to show a relationship between the scales. Lines connect the points.

Line graphs are sometimes used to make predictions. A **trend** is a pattern in the movement of the line. If you observe a trend, you can continue the pattern to make a prediction about time intervals beyond those shown on the graph.



EXAMPLE: In what month did the newspaper have the greatest increase in number of subscribers?

THINK: I need to find the part of the line that has the greatest (steepest) upward slope.

Step 1: Read the graph. The horizontal scale is marked in months. The vertical scale shows thousands of subscribers.

Step 2: Interpret the line. The line shows the greatest upward change from April to May. This represents an increase of about 6,000 subscribers in May. No other part of the line makes that much change in one month.

SOLUTION: The newspaper had the greatest increase in subscribers in **May.**

GED Problem

Which of the following is the best estimate of the number of subscribers the newspaper will have in September?

(1) 10,000
(2) 11,000
(3) 13,000
(4) 14,000
(5) 16,000

THINK: I see that the line climbs steadily from May to August. By extending the line, I can estimate the value for September.

Step 1: Look for a trend. Each interval on the vertical scale represents 2,000 subscribers. From May to August, the number of subscribers increases about $\frac{1}{2}$ interval, or 1,000, per month.

Step 2: Continue the trend. In August there were about 13,000 subscribers. If the trend continues, I can estimate 1,000 more in September. 13,000 + 1,000 = 14,000

ANSWER: (4) 14,000

TESTWISE ① ② ③ ④ ⑤

Some data analysis questions can be answered without doing any calculations. You may be able to answer a question by simply comparing the lengths of bars or the steepness of line segments.

Apply the Strategy

Directions: Solve the following problems. For problems 1–3, first write any numbers you will need to solve the problem. If you can solve the problem without number facts, write None.

Problems 1–3 refer to the graph *Newspaper Subscribers per Month* on page 24.

1. How many more subscribers were there in February than in January?

   (1) 0
   (2) 1,000
   (3) 1,500
   (4) 3,000
   (5) Not enough information is given.

   Facts: _____

   Answer: _____

2. About how many subscribers did the newspaper gain between March and July?

   (1) 5,000
   (2) 7,000
   (3) 12,000
   (4) 13,000
   (5) Not enough information is given.

   Facts: _____

   Answer: _____

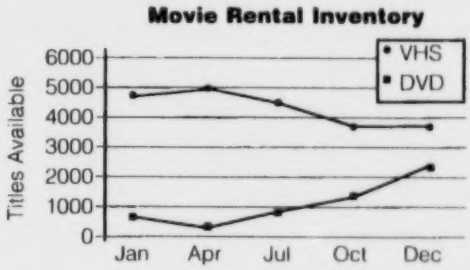
3. In what month did the newspaper have a 20% decrease in number of subscribers?

   (1) February
   (2) March
   (3) April
   (4) May
   (5) June

   Facts: _____

   Answer: _____

Problems 4–6 refer to the following graph.



4. About how many DVD titles were in the store's inventory in October?

   (1) 900
   (2) 1300
   (3) 2500
   (4) 3800
   (5) 5000

5. Which of the following conclusions about the store's inventory in the coming months can be supported by trends shown on the graph?

   (1) The number of DVD titles will decrease.
   (2) The number of DVD titles will stay the same.
   (3) The number of VHS titles will increase.
   (4) The number of DVD titles will increase.
   (5) There will always be more VHS than DVD titles.

6. In what month was there the greatest difference between the number of VHS and DVD titles?

   (1) January
   (2) April
   (3) July
   (4) October
   (5) December

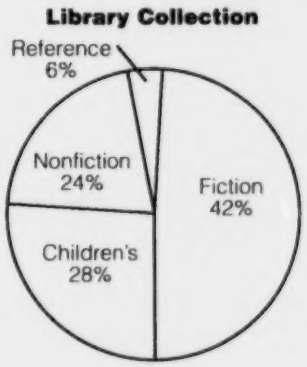
Answers start on page 44.

STRATEGY 12 Work with Circle Graphs

A **circle graph** shows how the parts of an amount are related to the whole amount. The entire circle represents 100%, or the whole amount. The individual sections are often labeled with percents, but they can also be labeled with fractions, cents, or whole numbers.

You can answer some GED Math problems by looking at the relative sizes of the sections. The size of a section shows what fraction of the whole amount that section represents. For example, a section labeled 25% will be exactly $\frac{1}{4}$ of the entire circle.

EXAMPLE: Jill works at a public library. She has created the circle graph at right to show what percent of the entire book collection falls into each category. If there are 6800 books in the collection, how many are nonfiction or reference books?



THINK: I need to combine the percents from the nonfiction and reference sections on the graph and use those percents to solve the problem.

Step 1: Read the graph. The nonfiction section is labeled 24%, and the reference section is labeled 6%. Add the percents. 24% + 6% = 30%

Step 2: Find 30% of 6800. 6800 × 0.3 = 2040 books

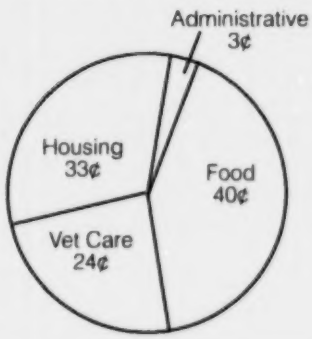
SOLUTION: There are **2040 books** that are either nonfiction or reference books.

GED Problem

Risa wants to donate $80 to the Pet Pals Rescue Shelter. According to the graph, how much of her donation will be spent on vet care?

(1) $60.80
(2) $32.00
(3) $24.00
(4) $19.20
(5) $2.40

Pet Pals Rescue Shelter
How Each $1 Donation Is Spent



THINK: Each section of the graph is labeled in cents. The entire graph, or 100%, represents $1. I can convert cents to percents to solve the problem.

Step 1: The graph states that 24 cents out of each dollar is spent on vet care. I know that $1.00 = 100 cents, so 24 cents is $\frac{24}{100}$, or 24% of $1.

Step 2: Find 24% of $80. $80 × 0.24 = $19.20. Out of the $80 donation, $19.20 will be spent on vet care.

ANSWER: (4) $19.20

TESTWISE ① ② ③ ④ ⑤

Estimate an answer using easier percents. Instead of finding 24% of $80, find 25%, or $\frac{1}{4}$. The answer $20 is closest to option (4).

Apply the Strategy

Directions: Solve the following problems. For problems 1–3, first write the facts from the graph that you will need to solve the problem.

Problems 1 and 2 refer to the *Library Collection* graph on page 26.

1. What percent of the library's collection is not categorized as children's books?

   (1) 28%
   (2) 42%
   (3) 66%
   (4) 72%
   (5) Not enough information is given.

   Facts: _____

   Answer: _____

2. The library committee votes to increase its total collection to 9500 books. If the committee keeps the same percent breakdown, how many books will be found in the fiction section of the library?

   (1) 2280
   (2) 2660
   (3) 3990
   (4) 4560
   (5) 5510

   Facts: _____

   Answer: _____

3. At the Pet Pals Rescue Shelter, about what fraction of every dollar donated is spent on housing? (See the graph on page 26.)

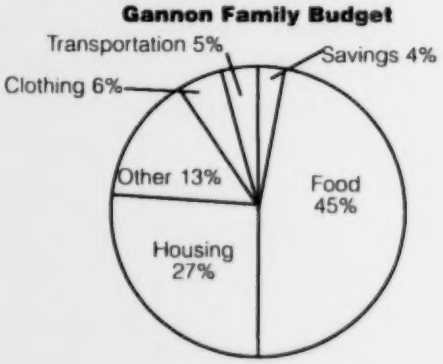
   (1) $\frac{1}{2}$
   (2) $\frac{1}{3}$
   (3) $\frac{1}{6}$
   (4) $\frac{1}{33}$
   (5) $\frac{3}{100}$

   Facts: _____

   Answer: _____

Problems 4–6 refer to the following information.

The Gannon family has prepared the following graph to show how its take-home pay is spent.



4. On which item does the Gannon family spend between $\frac{1}{3}$ and $\frac{1}{2}$ of its income?

   (1) food
   (2) housing
   (3) clothing
   (4) transportation
   (5) other

5. If the Gannon family's monthly take-home pay is $3750, how much does the family put in savings each month?

   (1) $40.00
   (2) $150.00
   (3) $187.50
   (4) $225.00
   (5) Not enough information is given.

6. What is the ratio of the percent spent on food to the percent spent on housing?

   (1) 2:1
   (2) 2:3
   (3) 3:2
   (4) 3:5
   (5) 5:3

Answers start on page 44.

STRATEGY 13 Find Mean, Median, and Mode

Mean, median, and mode are three ways of finding the center value of a group of numbers.

- The **mean** is the arithmetic average. To find the mean, add the values and divide by the number of values in the set of data. If a problem tells you to find the average, find the mean.
- The **median** is the middle number. To find the median, order the numbers from smallest to largest and find the middle value. If two numbers are in the middle, find the mean of those numbers.
- The **mode** is the number that occurs most often. A set of data may have one mode, more than one, or none at all.

EXAMPLE: Stuart received the following scores on five math tests: 92, 78, 86, 91, and 88. What is his average test score?

Step 1: Find the mean. First, add the scores. 92 + 78 + 86 + 91 + 88 = 435

Step 2: Since there are five scores, divide by 5. 435 ÷ 5 = 87

SOLUTION: Stuart's average test score is **87.**

GED Problem 1

The following temperatures were recorded in downtown Chicago for eight days in October. What is the median temperature?

52° 51° 54° 53°
50° 50° 53° 50°

(1) 50°
(2) 51°
(3) 51.5°
(4) 51.625°
(5) 53°

THINK: The median is the middle temperature.

Step 1: Arrange the temperatures in order from least to greatest:

50° 50° 50° 51° 52° 53° 53° 54°

Step 2: Find the middle value. Since there are an even number of values, use the two middle values.

50° 50° 50° **51° 52°** 53° 53° 54°

Step 3: Average the two values in the middle.

51° + 52° = 103°, and 103° ÷ 2 = 51.5°

ANSWER: (3) 51.5°

GED Problem 2

What is the mode of the temperatures listed above?

(1) 50°
(2) 51°
(3) 52°
(4) 53°
(5) 54°

THINK: The mode is the value that occurs most often.

The temperature 50° occurs three times. The temperature 53° occurs twice. The other temperatures occur only once. The mode is 50°.

ANSWER: (1) 50°

TESTWISE ① ② ③ ④ ⑤

The mean or median must be between the lowest and highest values in a set of data. Use this idea to eliminate answer choices and to check your work.

Apply the Strategy

Directions: Solve the following problems. For problems 1–3, describe the process you will use to find the answer.

1. Barbara has been keeping track of her long-distance minutes. Her weekly totals for four weeks are 48, 115, 62, and 35 minutes. What is Barbara's weekly average, in minutes, over the four-week period?

   (1) 42
   (2) 55
   (3) 65
   (4) 88
   (5) 260

   Process: _____

   Answer: _____

2. Alex does small home-repair jobs. He was paid the following amounts for the last five jobs: $100, $320, $65, $100, and $150. What is the median of the job amounts?

   (1) $100
   (2) $125
   (3) $147
   (4) $150
   (5) $192

   Process: _____

   Answer: _____

3. In one day an oil-change garage changed the oil and filter on the following vehicles: 15 sport utility vehicles, 32 sedans, 24 minivans, 19 pick-ups, and 5 sports cars. Which type of vehicle is the mode of the data?

   (1) sport utility vehicle
   (2) sedan
   (3) minivan
   (4) pick-up
   (5) sports car

   Process: _____

   Answer: _____

Problems 4 and 5 refer to the following information.

A basketball player had the following statistics during a 5-game tournament.

Game	Free Throw Attempts	Free Throws Made
1	6	4
2	14	9
3	17	12
4	10	6
5	8	4

4. What was the median number of free throw attempts for the player during the five-day tournament?

   (1) 10
   (2) 11
   (3) 12
   (4) 14
   (5) 17

5. What was the mean number of free throws made during the tournament?

   (1) 4
   (2) 7
   (3) 8
   (4) 11
   (5) 35

6. A large company tracked the number of workers who called in sick for 5 days. There were 18 people out on Monday, 15 on Tuesday, 12 on Wednesday, 8 on Thursday, and 24 on Friday. At this company, what is the daily average of workers who call in sick?

   (1) 11.0
   (2) 13.0
   (3) 14.0
   (4) 15.4
   (5) 19.25

Answers start on page 44.

STRATEGY 14 Solve Probability Problems

Probability is the chance that a particular event will happen. We write probability as the ratio of the number of **desired outcomes** (what you want to happen) to the number of **possible outcomes.** This ratio can also be written as a decimal, fraction, or percent.

EXAMPLE: Janet bought 10 raffle tickets at the county fair. One ticket will be drawn at the end of the evening. If 200 tickets are sold, what is the percent chance that one of Janet's tickets will win the raffle?

THINK: I will write a ratio and simplify the result.

Step 1: Write a ratio: $\frac{\text{desired outcomes}}{\text{possible outcomes}} = \frac{10}{200}$

Step 2: Simplify. Since the problem asks for a percent, simplify to a denominator of 100.

$$\frac{10 \div 2}{200 \div 2} = \frac{5}{100}$$

Step 3: Change the ratio to a percent. $\frac{5}{100} = 5\%$

SOLUTION: Janet has a **5%** chance of holding the winning ticket.

GED Problem 1

The spinner below has four equal sections. What is the probability of spinning the color red?

(1) 1:2
(2) 1:1
(3) 1:4
(4) 2:2
(5) 2:3

THINK: I will compare the number of red sections to the total number of sections.

Write the ratio and reduce. There are 2 red sections and 4 sections in all. $\frac{2}{4} = \frac{1}{2}$ The ratio of desired outcomes to possible outcomes is 1 to 2.

ANSWER: (1) 1:2

GED Problem 2

A bag holds 20 marbles. Eight are black, and 12 are white. Four black marbles are removed from the bag. If you choose one more marble from the bag at random, what is the chance that it will be white?

(1) 80%
(2) 75%
(3) 60%
(4) 40%
(5) 12%

THINK: Some marbles have been removed. This will affect the number of possible outcomes.

Step 1: Subtract: 20 total – 4 black = 16 marbles in all. There are still 12 white marbles in the bag.

Step 2: Write a ratio and convert to a percent.

$$\frac{12 \text{ white}}{16 \text{ total}} = \frac{3}{4} = 0.75 = 75\%$$

ANSWER: (2) 75%

TESTWISE ① ② ③ ④ ⑤

On the GED Math Test, fractions and decimals are always written in simplest terms. If your answer doesn't match one of the choices, see if your answer can be simplified.

Apply the Strategy

Directions: Solve the following problems. For problems 1–3, first write the number of desired outcomes and the number of possible outcomes.

1. A game is played with a regular six-sided die with sides numbered from 1 to 6. Tom rolls the die once. What is the chance of rolling an even number?

   (1) 1 out of 6
   (2) 1 out of 3
   (3) 1 out of 2
   (4) 2 out of 5
   (5) 2 out of 3

   Desired Outcomes: _____

   Possible Outcomes: _____

   Answer: _____

2. A spinner has five equal sections. Two sections are white and three are blue. What is the chance of not spinning white?

   (1) 20%
   (2) 30%
   (3) 40%
   (4) 60%
   (5) Not enough information is given.

   Desired Outcomes: _____

   Possible Outcomes: _____

   Answer: _____

3. Brad has twenty pennies in his pocket. Eight of the coins were minted in 2001. If he chooses a coin at random, what is the chance that it was minted in the year 2001?

   (1) 8%
   (2) 40%
   (3) 50%
   (4) 80%
   (5) 100%

   Desired Outcomes: _____

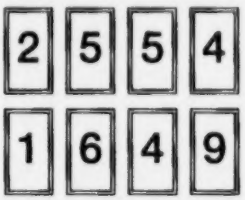
   Possible Outcomes: _____

   Answer: _____

4. Melanie is one of 25 employees at Kimball Electronics. The company plans to choose 3 employees at random to attend a conference. What is the chance that Melanie will be chosen to go to the conference?

   (1) 12%
   (2) 22%
   (3) 25%
   (4) 50%
   (5) 75%

5. Max is playing a card game. He holds the following cards in his hand:

   If one card is chosen at random from his hand, what is the chance that the chosen card will have a value equal to or greater than 4?

   (1) $\frac{1}{8}$
   (2) $\frac{1}{4}$
   (3) $\frac{1}{2}$
   (4) $\frac{5}{8}$
   (5) $\frac{3}{4}$

6. At a restaurant that averages 250 customers per day, customers are invited to drop their business cards in a box to win a free meal. One card is drawn per day. Robin visits the restaurant on Friday and drops in her card. What is the chance that Robin will win a free meal?

   (1) 1:5
   (2) 1:7
   (3) 1:100
   (4) 1:250
   (5) Not enough information is given.

Answers start on page 44.

STRATEGY 15 Use the Calculator to Solve Data Problems

You will be given a Casio *fx*-260 calculator, as shown here, to use on Part I of the GED Math Test. In data analysis, a calculator is useful for converting probability ratios to decimals or percents. You can also use it to find averages.

Finding an average, or mean, can be a lengthy procedure. You need to add the list of numbers and then divide by the number of items in the list. You can find an average using the parenthesis keys found in the middle of the third row of keys: [(---] and [---)].

EXAMPLE: A baseball player hit the following number of home runs over five baseball seasons: 22, 20, 27, 32, and 44. What was the average number of home runs hit by the player per season during the 5-year period?

Press: [(---] 22 [+] 20 [+] 27 [+] 32 [+] 44 [---)] [÷] 5 [=] 29

SOLUTION: The baseball player averaged **29 home runs** per season.

GED Problem 1

Daniel earned $15,450 two years ago. Last year he earned $24,280. What was his mean salary during the two-year period?

(1) $39,730
(2) $24,865
(3) $19,865
(4) $13,243
(5) $8,830

THINK: I can use a calculator to find the mean quickly.

Press: [(---] 15450 [+] 24280 [---)] [÷] 2 [=] 19865.

ANSWER: (3) $19,865

GED Problem 2

A card game uses a deck of 64 cards. There are 24 red, 18 green, 6 blue, and 16 yellow cards. If one card is chosen at random, what is the chance that it will be red?

(1) 12%
(2) 25%
(3) 37.5%
(4) 60%
(5) 62.5%

THINK: I can use the calculator to find the percent.

Step 1: The ratio of red cards to total cards in the deck is 24/64. Do not simplify.

Step 2: Use the calculator to convert the ratio to a percent. Press [Shift] and then % (above the = key).

Press: 24 [÷] 64 [Shift] %

The display reads: 37.5

ANSWER: (3) 37.5%

TESTWISE
① ② ③ ④ ⑤

Use a calculator only when it makes work easier. If you can estimate an answer or spot a trend on a graph, then use the method that works best for you.

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Apply the Strategy

Directions: Use a calculator to solve these problems. For problems 1–3, first write the calculator key sequence that you will use. Then solve.

1. The Carters' utility bills for three months were for the amounts of $102.92, $135.28, and $95.04. What is the average of the three bills?

   (1) $102.92
   (2) $107.96
   (3) $111.08
   (4) $182.80
   (5) $333.24

   Calculator Key Sequence: _____

   Answer: _____

2. An office has 13 full-time workers and 12 part-time workers. If one worker is chosen at random to attend a luncheon, what is the chance that the person will be a full-time worker?

   (1) 13%
   (2) 25%
   (3) 26%
   (4) 48%
   (5) 52%

   Calculator Key Sequence: _____

   Answer: _____

3. Brian bowled four games and had the following scores: 228, 170, 194, and 188. What is his average score?

   (1) 179
   (2) 181
   (3) 191
   (4) 195
   (5) 205

   Calculator Key Sequence: _____

   Answer: _____

Problems 4 and 5 refer to the information below.

In a residential area, the police set up a radar sensor to find out what speed drivers usually drive on the road. The box below shows the driving speeds of the first twelve drivers as recorded by the sensor.

40	28	32	22	36	44
24	32	38	20	46	22

4. The speed limit on the road is 25 miles per hour. If one of the drivers is chosen at random from the group, what is the chance, to the nearest percent, that the driver is the one who was speeding?

   (1) 33%
   (2) 50%
   (3) 67%
   (4) 75%
   (5) Not enough information is given.

5. What was the average speed, in miles per hour, of the twelve drivers?

   (1) 24
   (2) 32
   (3) 33
   (4) 36
   (5) 42

6. A spinner has seven equal sections. Four of the sections are blue, two are green, and one is white. What is the chance, to the nearest percent, of spinning the color green?

   (1) 14%
   (2) 29%
   (3) 57%
   (4) 71%
   (5) 86%

Answers start on page 44.

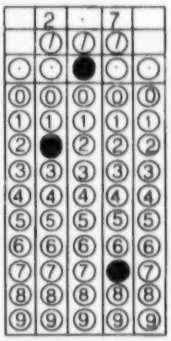
STRATEGY 16 Grid In Answers to Data Analysis Problems

As you know, your ability to calculate the exact answer to a problem will be tested on the GED Math Test using grid-in questions. Review these rules for entering an answer:

- Your answer must fit within the five columns of the answer grid.
- If you use the fraction slash or decimal point, it must occupy its own column.
- Enter mixed numbers as improper fractions.

Some answers to data analysis questions are ratios or percents. To enter a ratio as the answer to a problem, express it as a fraction. You do not have to simplify the ratio to lowest terms as long as it will fit within the columns. For probability questions, express chance as either a decimal or a fraction. You cannot grid in a percent on the GED Math Test because the grid does not contain the % symbol.

EXAMPLE: Farah shipped four packages to Los Angeles today. The weights of the packages were 2.8, 3.6, 1.8, and 2.6 pounds. What is the median shipping weight of the packages?



THINK: The median weight is the middle value. However, since there is an even number of packages, two weights will be in the middle.

Step 1: Write the weights in order: 3.6 2.8 2.6 1.8

Step 2: Find the average of the two middle weights: $(2.8 + 2.6) \div 2 = 2.7$

SOLUTION: The median weight of the packages is **2.7 pounds.**

GED Problem

A school sold 125 raffle tickets. If Rachel bought 5 tickets, what is the probability that one of Rachel's tickets will win?

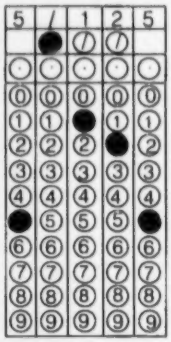
Mark your answer in the circles in the grid.

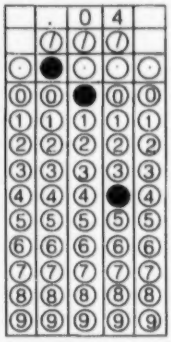
THINK: I can use the probability ratio to answer the question.

Step 1: Write the ratio:

$$\frac{\text{desired outcomes}}{\text{possible outcomes}} = \frac{5}{125}$$

Step 2: Write the answer in the grid. Since $\frac{5}{125}$ will fit in five columns, you don't need to reduce the fraction. However, you could reduce it to $\frac{1}{25}$ or change it to a decimal: 0.04.





ANSWER: Two ways to mark the grid are shown to the right.

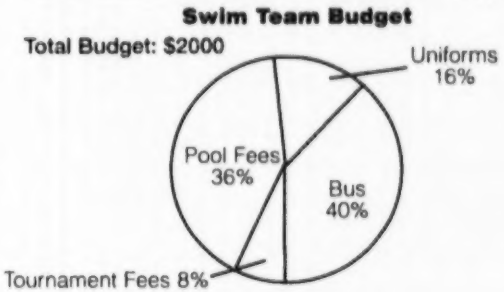
TESTWISE ① ② ③ ④ ⑤

Always enter your answer in the top row of the grid, writing one number or symbol to a box. Then fill in the circles in the grid below. Fill in the circles carefully. Only the circles are graded. Your answer at the top of the grid will not be scored.

Apply the Strategy

Directions: Solve. For problems 1–3, first decide to express your answer as a whole number, a fraction, or a decimal. Then solve. You may use your calculator as needed.

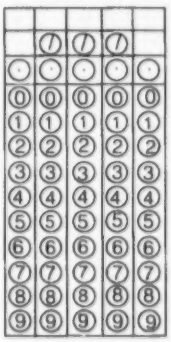
Problems 1 and 2 refer to the following graph.



1. What is the ratio of the expense for uniforms to the expense for buses?

   Mark your answer in the circles in the grid.

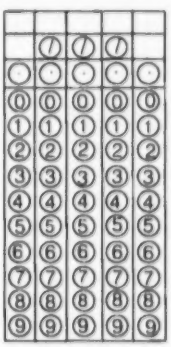
   Whole number, fraction, or decimal? _____



2. What amount, in dollars, is budgeted for pool fees?

   Mark your answer in the circles in the grid.

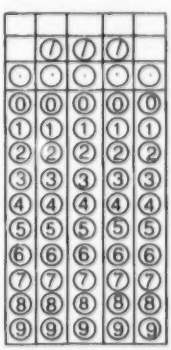
   Whole number, fraction, or decimal? _____



3. Tim has six black socks and six brown socks in a drawer. He reaches in and takes out one black sock. If he selects another sock at random, what is the chance that the sock will be black?

   Mark your answer in the circles in the grid.

   Whole number, fraction, or decimal? _____

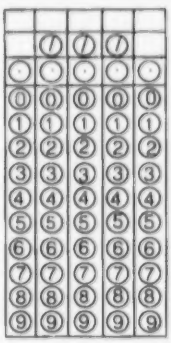


4. Calvin works in a hotel. He received the following number of tips during each hour of his shift:

Hour 1: 3 tips	Hour 4: 6 tips
Hour 2: 6 tips	Hour 5: 4 tips
Hour 3: 5 tips	Hour 6: 6 tips

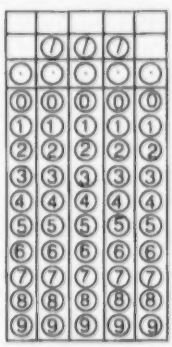
   What is the mode of the numbers of tips Calvin received per hour?

   Mark your answer in the circles in the grid.



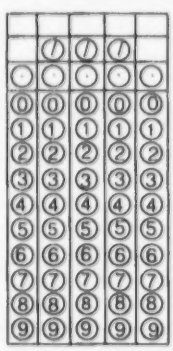
5. A football team scores the following points during its first five games of the season: 31, 35, 54, 14, and 31. What is the average number of points scored per game by the team?

   Mark your answer in the circles in the grid.



6. A game has a 24-card deck. The deck has 12 blue cards numbered from 1 through 12, and 12 red cards numbered from 1 through 12. What is the probability of drawing a red card equal to or greater than 7?

   Mark your answer in the circles in the grid.



Answers start on page 45.

GED Practice 2: Tables, Graphs, and Data Analysis

Part I: You may use a calculator.

For questions 1–4, choose the one best answer. Fill in the grid for question 5.

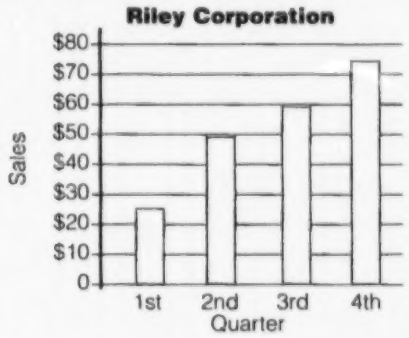
1. The results of a recent poll are shown below.

Proposed Superstore	
For	42
Against	58
Undecided	20

What percent of the people polled are for the proposed superstore?

(1) 20%
(2) 35%
(3) 42%
(4) 53.8%
(5) 58%

2. Based on the graph below, in what quarter were sales three times as much as in the first quarter?



(1) 1st quarter
(2) 2nd quarter
(3) 3rd quarter
(4) 4th quarter
(5) Not enough information is given.

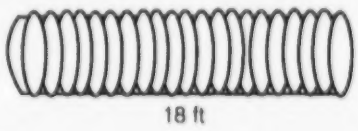
3. Richard saves spare change in a jar. Out of the 180 coins in his change jar, 27 coins are nickels. If he chooses a coin at random, what is the chance that it is a nickel?

(1) 15%
(2) 27%
(3) 30%
(4) 85%
(5) 90%

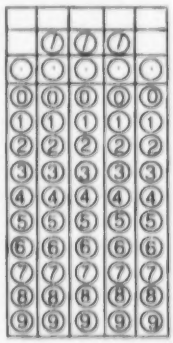
4. An office supply drawer holds 15 pens with blue ink and 10 pens with black ink. If one pen is chosen at random, what is the chance that it will be a pen with blue ink?

(1) 15%
(2) 25%
(3) 30%
(4) 40%
(5) 60%

5. If 6 feet are cut from the length of plastic drainage tile shown below, what is the measure, in yards, of the remaining piece?



Mark your answer in the circles in the grid.



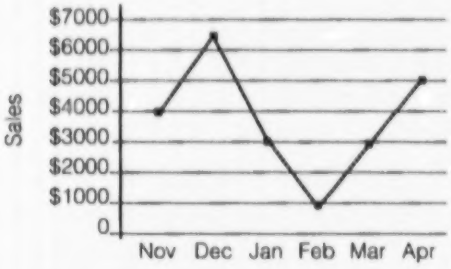
Part II: You may not use a calculator.

For questions 6–9, choose the one best answer. Fill in the grid for question 10.

6. In five days, a store took in sales of $320, $280, $285, $375, and $345. Which of the following expressions can be used to find the average sales for the days listed?

   (1) $320 + $280 + $285 + $375 + $345
   (2) $320 × $280 × $285 × $375 × $345
   (3) ($320 + $280 + $285 + $375 + $345) ÷ 5
   (4) ($320 × $280 × $285 × $375 × $345) ÷ 5
   (5) 5($320 + $280 + $285 + $375 + $345)

7. Below is a graph showing past sales for AmCore Company. Based on the current trend, what would be the most likely amount for sales in May?

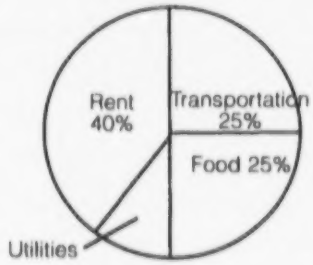


   (1) $1000
   (2) $3000
   (3) $5000
   (4) $7000
   (5) $9000

8. For the last seven days, Sarah earned the following in tips: $35, $65, $63, $77, $42, $58, and $59. What is the median amount of Sarah's tips?

   (1) $77
   (2) $59
   (3) $58
   (4) $57
   (5) $35

9. Andre has set a monthly budget of $1600 for rent, transportation, food, and utilities. The circle graph below shows how the money is budgeted.

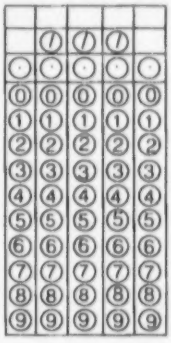


   How much does Andre budget for utilities?

   (1) $160
   (2) $400
   (3) $640
   (4) $800
   (5) $1600

10. Anthony asked all of his friends what their lucky number was. Their responses were 7, 4, 8, 11, 9, 5, 5, 4, 4, 11, and 9. What is the mode of the lucky numbers listed?

    Mark your answer in the circles in the grid.



Answers start on page 45.

Evaluation and Action Plan

Check your answers. Then evaluate your results and make a plan.

Results:
- ☐ Five or fewer correct • *Need to study more*
- ☐ Six to eight correct • *Need to review*
- ☐ Nine to ten correct • *Ready to move on*

I need to work more on:
- ☐ Tables (Questions 1 and 2)
- ☐ Graphs (Questions 7 and 9)
- ☐ Probability (Questions 3 and 4)
- ☐ Mean, median, mode (Questions 6, 8, and 10)
- ☐ Calculator skills (Questions 1–5)
- ☐ Filling in grids (Questions 5 and 10)

Practice GED Test

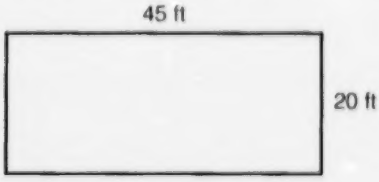
Part I: You may refer to the formulas on pages 12 and 13 as needed. You may use a calculator.

For questions 1–10, choose the one best answer. Fill in the grid for questions 11 and 12.

1. A roll of carpet runner has 33 yards left on it. If 20 feet of runner is cut from the roll, how much of the runner is left on the roll?

   (1) 13 ft
   (2) 27 ft
   (3) 13 yd
   (4) 55 ft
   (5) 26 yd 1 ft

2. The measurements for a rectangular basement floor are shown below. The owners decide to paint the floor. What is the measure of the space in square feet?



   (1) 65
   (2) 130
   (3) 400
   (4) 900
   (5) Not enough information is given.

3. A drum in the shape of a cylinder has a height of 3 feet. If the radius of the circular base is 1.5 feet, what is the measure of the space inside the cylinder to the nearest cubic foot?

   (1) 5
   (2) 8
   (3) 21
   (4) 42
   (5) 44

4. A pallet of canned tomato products measures 4 feet 9 inches high. If a maximum of 3 pallets can be stacked, how many feet high would a stack of 3 pallets of canned tomato products be?

   (1) 4.75
   (2) 7.75
   (3) 12.75
   (4) 14.25
   (5) 15.00

Questions 5 and 6 refer to the information below.

A pet store wants to find a name for its resident cat. The store's customers get to vote for a name at the checkout counter. The table below shows the current tally.

Name	Votes
Whiskers	𝍸 𝍸 𝍸 𝍸
Smokey	𝍸 𝍸 𝍸
Lucky	𝍸 ///
Snowball	𝍸 𝍸 //

5. Given the votes so far, what is the ratio of votes for the name Whiskers to the other names suggested?

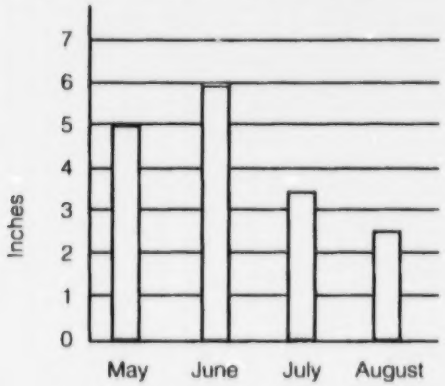
   (1) 20/1
   (2) 4/7
   (3) 7/4
   (4) 11/4
   (5) 4/11

6. What is the median number of votes cast?

   (1) 12
   (2) 13.5
   (3) 15
   (4) 27
   (5) Not enough information is given.

41

7. The following graph compares the amount of rainfall over a four-month period.



What is the average rainfall, in inches, for the four months shown?

(1) 17
(2) 13
(3) 4.25
(4) 3.5
(5) Not enough information is given.

8. A stoplight turns and holds red for a period of 2 minutes. If the same stoplight holds green or yellow for another 3 minutes, what is the chance that a driver will encounter a green light at that stoplight?

(1) 1:3
(2) 3:2
(3) 2:5
(4) 5:2
(5) Not enough information is given.

9. The Brown family's credit card bills for three months were for the amounts of $156.89, $128.35, and $175.08. What is the average amount of the three bills?

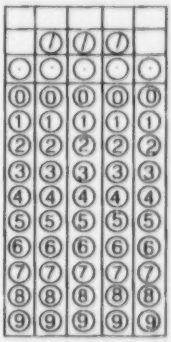
(1) $46.73
(2) $153.44
(3) $156.89
(4) $175.08
(5) $460.32

10. Jim uses a tape measure to mark off 96 inches on a plastic gutter. If he plans to cut the gutter at the 96-inch mark, how many feet of gutter will he cut off?

(1) 8
(2) 9.5
(3) 9.6
(4) 9.75
(5) 32

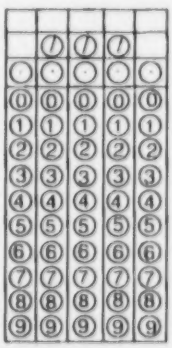
11. Eight square stepping-stones that are the same size are placed end to end and cover a distance of 12 feet. How many feet long is each individual stepping-stone?

Mark your answer in the circles in the grid.



12. A paper bag holds five 60-watt bulbs, eight 75-watt bulbs, and three 100-watt bulbs. What is the ratio of 75-watt bulbs to total bulbs? Express your answer as a fraction.

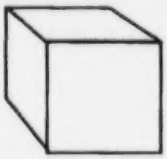
Mark your answer in the circles in the grid.



Part II: You may refer to the formulas on pages 12 and 13 as needed. You may not use a calculator.

For questions 13–22, choose the one best answer. Fill in the grid for questions 23 and 24.

13. Paula is building a compost container. She read that the ideal size is 4 feet long by 4 feet wide by 4 feet high. If she uses those dimensions, which of the following expressions shows the number of cubic feet of compost the container will hold?



(1) $2 \times 4 + 2 \times 4$
(2) $4 + 4 + 4$
(3) 4^3
(4) $\frac{1}{2} \times 4 \times 4$
(5) 4×4

14. A can of soda pop holds 355 milliliters. How many more milliliters do six cans of soda pop hold than a 2-liter bottle of soda pop?

(1) 2130
(2) 1645
(3) 1930
(4) 155
(5) 130

15. Ivan's dog measures 2 feet 8 inches high at its shoulder. What is the dog's height in inches?

(1) 24
(2) 28
(3) 32
(4) 36
(5) 40

16. A football running back had the following statistics for the first 5 games of the season.

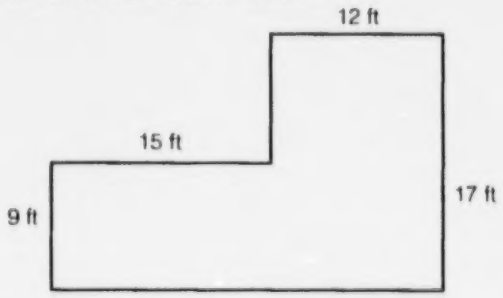
Game	1	2	3	4	5
Yards	65	85	40	70	95

How many yards did the running back average for the games listed?

(1) 23
(2) 40
(3) 70
(4) 71
(5) 95

Questions 17 and 18 refer to the information below.

A gift shop has two rooms, both rectangular. The measurements are shown below.



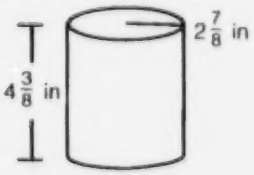
17. What is the distance in feet around the entire gift shop?

(1) 53
(2) 61
(3) 80
(4) 88
(5) Not enough information is given.

18. How many square feet does the gift shop cover?

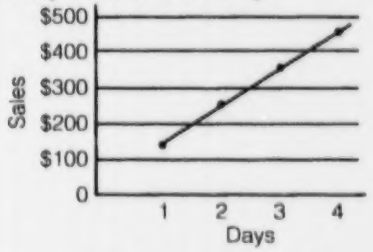
(1) 339
(2) 204
(3) 135
(4) 88
(5) Not enough information is given.

19. Which of the following expressions can be used to find the volume of the can below?



(1) $\pi \times 2\frac{7}{8} \times 4\frac{3}{8}$
(2) $\pi \times (2\frac{7}{8})^2 \times 4\frac{3}{8}$
(3) $\pi \times (4\frac{3}{8})^2 \times 2\frac{7}{8}$
(4) $2 \times 2\frac{7}{8} \times 4\frac{3}{8}$
(5) $4 \times 4\frac{3}{8} \times 2\frac{7}{8}$

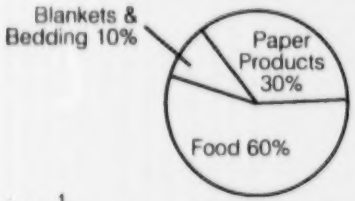
20. The line graph below shows candy sales a few days before a holiday.



If the trend continues, which of the following is the best estimate of sales for Day 5?

(1) $350
(2) $400
(3) $450
(4) $500
(5) $550

21. The circle graph below shows how a local shelter spends each dollar it collects. What fraction of each dollar goes to food?



(1) $\frac{1}{10}$
(2) $\frac{1}{3}$
(3) $\frac{1}{2}$
(4) $\frac{3}{5}$
(5) Not enough information is given.

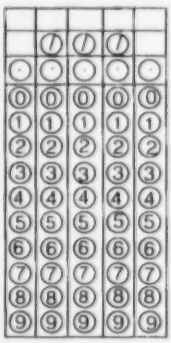
22. The following high temperatures were recorded in Rockford for eight days in December. What is the median temperature?

32°	31°	34°	23°
30°	30°	33°	20°

(1) 33°
(2) 30.5°
(3) 30°
(4) 29.125°
(5) 27°

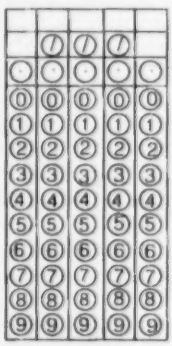
23. A recipe calls for $1\frac{1}{4}$ cups of sugar. If you double the recipe, how many cups of sugar will you need?

Mark your answer in the circles in the grid.



24. A deck of playing cards has 26 red cards and 26 black cards. If there are two red 7s and two black 7s in a deck, what is the chance of drawing a red 7 at random?

Mark your answer in the circles in the grid.



PRACTICE GED TEST EVALUATION AND STUDY PLAN

Check your answers. Fill in the results in the chart and make an action plan.

Questions	Strategy	Pages	Number Correct/Total
1, 4, 10, 11, 14, 15, 23	Measurement	2–7	_____/7
2, 3, 13, 17, 18, 19	Formulas and Diagrams	8–17	_____/6
5, 7, 20, 21	Tables and Graphs	20–27, 32–35	_____/4
6, 9, 16, 22	Mean, Median, and Mode	28–29, 32–35	_____/4
8, 12, 24	Probability	30–31, 32–35	_____/3
			Total: _____/24

Results

- ☐ Twelve or fewer correct • *Need to study more*
- ☐ Thirteen to eighteen correct • *Need to review some skills*
- ☐ Nineteen to twenty-four correct • *Mastery of skills*

Plan: I need to work more on

- ☐ Measurement (Questions 1, 4, 10, 11, 14, 15, 23)
- ☐ Formulas (Questions 2, 3, 13, 17, 18, 19)
- ☐ Data Analysis (Questions 5, 6, 7, 9, 16, 20, 21, 22)
- ☐ Probability (Questions 8, 12, 24)

Answer Key

STRATEGY 1: REVIEW THE STANDARD UNITS OF MEASUREMENT (page 3)

1. Fact: **1 hr = 60 min**
   Answer: **(2) 3 hr 20 min**
   10 min × 20 = 200 min
   200 min ÷ 60 = 3 r20 = 3 hr 20 min
2. Fact: **1 ft = 12 in**
   Answer: **(3) 4 ft 9 in**
   57 in ÷ 12 = 4 r9 = 4 ft 9 in
3. Fact: **1 lb = 16 oz**
   Answer: **(3) 19**
   6 lb × 16 = 96 oz
   96 oz ÷ 5 = 19.2, which means 19 full packages
4. **(4) 7** 4 yd × 3 = 12 ft, and 12 ft − 5 ft = 7 ft
5. **(1) 17** Change all ingredient amounts to cups:
   2 pt × 2 c = 4 cups in a quart
   Substitute in: 2 qt + 3 pt + 3 c
   2(4 c) + 3(2 c) + 3 c =
   8 c + 6 c + 3 c = 17 c
6. **(2) $9\frac{1}{2}$** 114 in ÷ 12 = 9.5, which equals $9\frac{1}{2}$ ft

STRATEGY 2: REVIEW THE METRIC UNITS OF MEASUREMENT (page 5)

1. Fact: **1000 milliliters = 1 liter**
   Answer: **(1) 1.5**
   250 mL ÷ 1000 = .25 L
   .25 L × 6 = 1.5 L
2. Fact: **100 centimeters = 1 meter**
   Answer: **(4) 26**
   2.6 m × 100 = 260 cm, and 260 cm ÷ 10 cm (the length of one tile) = 26 tiles
3. Fact: **1 kilometer = 1000 meters**
   Answer: **(3) 20**
   1000 m ÷ 50 m = 20 lengths of the pool
4. **(2) 4.5** You need to add the numbers on the label. Since 1000 mg = 1 g, 500 mg = 0.5 g. Add: 1.5 g + 0.5 g + 2.5 g = 4.5 g.
5. **(3) 7.2** 8 boards × 90 cm = 720 cm. Change centimeters to meters: 720 cm ÷ 100 = 7.2 m.
6. **(4) 2.29** Change 710 mL to liters: 710 mL ÷ 1000 = 0.71 L. Subtract the amount poured from the total: 3 − 0.71 = 2.29. You can also change to mL: 3 L = 3000 mL; then subtract: 3000 − 710 = 2290 mL. Convert to liters: 2290 ÷ 1000 = 2.29 L.

STRATEGY 3: USE THE CALCULATOR TO SOLVE MEASUREMENT PROBLEMS (page 7)

Some possible solutions have been shown here. You should use the way that is easiest for you.

1. **either fractions or decimals**
   (4) 6 hr
   45 minutes is $\frac{3}{4}$ or 0.75 hr, and 30 min is $\frac{1}{2}$ or 0.5 hr.
   Decimals: Press: 1.75 [+] 1.5 [+] 2.75 [=] [6.]
   Fractions: 1 [a b/c] 3 [a b/c] 4 [+] 1 [a b/c] 1 [a b/c] 2 [+] 2 [a b/c] 3 [a b/c] 4 [=] [6.]
2. **fractions**
   (1) 13 c 1 fl oz
   Use the fact: 1 c = 8 fl oz.
   Press: 2 [a b/c] 5 [a b/c] 8 [×] 5 [=] [13 1 18], which means $13\frac{1}{8}$ c or 13 c 1 fl oz.
3. **decimals**
   (4) 24
   Use the fact: 1 lb = 16 oz, 8 oz is $\frac{1}{2}$, or 0.5 lb.
   Press: 12 [÷] .5 [=] [24.]
4. **(4) 86 $\frac{1}{4}$** Multiply the number of gift boxes by the weight of each box. Use the fact: 16 oz = 1 lb.
   Press: 5 [a b/c] 12 [a b/c] 16 × 15 = [86 1 4.]
5. **(2) 27 yd 2 ft** Use the fact: 3 ft = 1 yd. Divide to write 83 ft in yards and ft. 83 ÷ 3 = 27.667. Use the whole number. Find how many feet 27 yards equals: 27 × 3 = 81. Subtract to find the number of feet left over from the original amount: 83 − 81 = 2 ft.
   83 ft = 27 yd 2 ft
6. **(3) 12** Since 1 foot = 12 inches, 3 inches is $\frac{1}{4}$ or 0.25 foot. Press: 16 [÷] 1.25 [=] [12.8]
   You could stack 12 boxes in the space. Ignore the remainder, since you cannot stack a fraction of a box.
7. **(3) 28 ft 9 in** Since 1 ft = 12 in, 6 in equals $\frac{1}{2}$, or 0.5 ft, and 9 in equals $\frac{3}{4}$, or 0.75 ft.
   Press: 50 [−] 8.75 [−] 12.5 [=] [28.75], which equals 28 ft 9 in.

STRATEGY 4: USE DIAGRAMS IN MEASUREMENT PROBLEMS (page 9)

1. **(4) 11 ft** Label each of the remaining sides 2 ft 9 in.
   2 ft 9 in × 4 = 8 ft 36 in = 8 ft + 3 ft = 11 ft
2. **(1) 12.6** Draw a line starting at *home* and ending at *work*. Label the entire line *15.4 miles*. Mark a point on the line, and label it *daycare*. Label the distance from home to the daycare center *2.8 miles*. Subtract: 15.4 mi − 2.8 mi = 12.6 mi.
3. **(2) 9.3** Label the unmarked edge *1.7 cm*.
   Add: 2.2 + 1.3 + 1.7 + 1.7 + 2.4 = 9.3 cm.
4. **(4) 100** Since the shapes are rectangles, you know the opposite sides are equal. Add: 26 + 24 + 26 + 24 = 100.
5. **(5) 170** The bottom of the unshaded rectangle is 45 − 26 = 19 ft. The small part on the right side of the unshaded portion is 40 − 24 = 16 ft. Add all of the outside borders: 40 + 45 + 24 + 26 + 16 + 19 = 170 ft.
6. **(2) 18 ft 4 in** If you make a sketch, you can see that you need to add the three lengths that will have molding: 7 ft 6 in + 7 ft 6 in + 3 ft 4 in = 17 ft 16 in = 17 ft + 1 ft 4 in = 18 ft 4 in.

STRATEGY 5: SOLVE PERIMETER, AREA, AND VOLUME PROBLEMS (page 11)

1. Type of Measure: **area**
   Answer: **(2) 2,704**
   Multiply: 52 yd × 52 yd = 2,704 sq yd
2. Type of Measure: **perimeter**
   Answer: **(4) 34**
   Add: 8 ft + 9 ft + 8 ft + 9 ft = 34 ft
3. Type of Measure: **volume**
   Answer: **(5) 252**
   Multiply: 7 in × 3 in × 12 in = 252 cu in
4. **(2) $810** First, find the area: 18 m × 9 m = 162 m^2. Then multiply to find the cost: 162 m^2 × $5 = $810.
5. **(3) 54** Find the perimeter: 18 m + 9 m + 18 m + 9 m = 54 m

6. **(3) 14** Find the volume: 1 ft × 4 ft × $3\frac{1}{2}$ ft = 14 cu ft. You may find it easier to work with 3.5.

Strategy 6: Use the Formulas Page with Set-up Problems (page 13)

1. Formula: **Volume = length × width × height**
   Answer: **(3) 6 × 3 × 2**
2. Formula: **Area = length × width**
   Answer: **(4) 25 × 22**
3. **(5) 7.3 + 9.1 + 8** Use the formula for finding the perimeter of a triangle: Perimeter = $side_1 + side_2 + side_3$.
4. **(1) 2^3** Use the formula for finding the volume of a cube: Volume = $edge^3$. (*Note: edge* and *side* are the same measure.)

Strategy 7: Use Formulas to Solve Problems (page 15)

1. Formula: **Volume = length × width × height**
   Answer: **(2) 1.8** 2 × 1.8 × 0.5 = 1.8 cubic meters
2. Formula: **Area = length × width**
   Answer: **(1) 780** 30 × 26 = 780 square inches
3. Formula: **Volume = $\frac{1}{3} \times \pi \times$ radius^2 × height**
   Answer: **(3) 113** $\frac{1}{3} \times 3.14 \times 3^2 \times 12 = 113.04$, which rounds to 113 cubic inches
4. **(4) 388** Use the formula for finding the perimeter of a rectangle: 2 × length + 2 × width.
   2 × 110 + 2 × 84 = 388 feet
5. **(2) 75** Use the formula for finding the volume of a cylinder: π × radius^2 × height.
   $3.14 \times 2^2 \times 6 = 75.36$, which rounds to 75 cubic inches
6. **(2) 120** First, find the volume of the room in cubic feet using the formula: volume = length × width × height.
   20 × 15 × 10 = 3000 cubic feet. Set up a proportion:
   $$\frac{4 \text{ min}}{100 \text{ cu ft}} = \frac{x \text{ min}}{3000 \text{ cu ft}}$$
   Solve: 4 × 3000 ÷ 100 = 120 minutes.

Strategy 8: Grid In Answers to Measurement Problems (page 17)

1. Unit of measure: feet
   15 (on the grid)
   2.5 in × 72 = 180 in; 180 in ÷ 12 = 15 ft
2. Unit of measure: meters
   4.2 (on the grid)
   Since 100 cm = 1 m, 90 cm = 0.9 m. Use the formula: Perimeter = 2 × length + 2 × width.
   2 × 1.2 + 2 × 0.9 = 4.2 meters
3. Unit of measure: cups
   33/4 or 8.25 (on the grid)
   Fractions: $2\frac{3}{4} \times 3 = 6\frac{9}{4} = 8\frac{1}{4}$ cups
   Convert for the grid: $8\frac{1}{4} = \frac{33}{4}$
   Decimals: 2.75 × 3 = 8.25 cups
4. **45** (on the grid) 500 mg × 90 = 45,000 mg. Use the fact: 1 gram = 1,000 milligrams. 45,000 mg ÷ 1,000 = 45 g
   Or use the fact: 500 mg = .5 g, and .5 × 90 = 45 g.
5. **7.5 or 15/2** (on the grid) Since there are 3 feet in each yard, 6 yd 2 ft = 20 ft. Subtract: 20 ft − 12.5 ft = 7.5 ft.
6. **5.25 or 21/4** (on the grid) Multiply: 45 customers × 7 minutes = 315 minutes. Use the fact: 1 hour = 60 minutes. 315 min ÷ 60 = 5.25 hr

GED Practice 1 (pages 18–19)

Part I

1. **(3) 2 hr 40 min** 20 min × 8 = 160 min, and 160 ÷ 60 = 2 hr 40 min
2. **(4) 9** Multiply length by width by height: $2 \times 3 \times 1\frac{1}{2} =$ 9 cu ft
3. **(5) 363** Find the total distance around the park.
   2 × 45.5 + 2 × 136 = 91 + 272 = 363 ft
4. **(2) 6** Convert pounds to ounces and divide. 3 lb = 3 × 16 oz = 48 oz, and 48 ÷ 8 = 6 packages
5. **20** The area of a square equals the square of a side. To find the length of one side, find the square root of the area: $\sqrt{25} = 5$ ft. Find the amount of edging needed by finding the perimeter: 4 × 5 = 20 ft.

Part II

6. **(4) 6 × 6 × 2.5** Multiply length by width by height to find the volume of a rectangular solid.
7. **(2) 3.5** Convert milligrams to grams, and add the fat amounts listed. 500 mg = .5 g, and .5 + 2 + 1 = 3.5 g
8. **(4) 16 ft 4 in** Add the length of the two sides (height) and the width of the doorway: 6 ft 8 in + 3 ft + 6 ft 8 in = 15 ft 16 in = 16 ft 4 in.
9. **(5) 3 + 4 + 5** Add the length of the sides to find the perimeter of a triangle.
10. **600** Find how many 5-minute intervals are in 1 hour: 60 min ÷ 5 min = 12. Multiply the number of 5-minute intervals by the average number of cars: 12 × 50 = 600 cars per hour.

Strategy 9: Use Tables and Charts (page 21)

1. Facts from Table: $22.80 (price for 2 or more sets of 36-in shutters)
   Answer: **(2) $68.40** $22.80 × 3 = $68.40
2. Facts from Table: 4.8 lb (weight per set of 34-inch shutters) and 7.5 lb (weight per set of 50-inch shutters)
   Answer: **(2) 34.2** (4.8 × 4) + (7.5 × 2) = 34.2 lb
3. Facts from Table: $825 (price of the A500 aquarium)
   Answer: **(2) $2742** $3567 − $825 = $2742
4. **(4) 150.0** Walking 3 miles per hour burns 300 calories per hour for a person weighing 155 lb. To find the amount for a half hour, divide by 2:
   300 ÷ 2 = 150 calories.
5. **(5) running at a rate of 8 min per mi** Scan the column for a 200-lb person. Of the types of exercise listed in the choices, the greatest number of calories burned is in the row for running an 8-minute mile.
6. **(3) 405** 45 minutes is $\frac{45}{60}$, or $\frac{3}{4}$, hour. At a rate of 45 yd/min, a 110-lb person will burn 540 calories in 1 hour. $540 \times \frac{3}{4} = 405$

Strategy 10: Work with Bar Graphs (page 23)

1. Estimates of Bars: L200 West about 9500; L100 West about 8500
   The axis shows sales in thousands.
   Answer: **(4) 1000** Subtract: 9500 − 8500 = 1000 cars.
2. Estimates of Bars: L300 East about 5500; L300 West at 8000
   Answer: **(2) 70%** 5500 ÷ 8000 = 0.6875, which is closest to option (2) 70%.
3. **(5) 3:1** The L300 bar is about 8500 cars, and the L100 bar is about 3000. Based on the choices offered, round 8500 to 9000 and set up a ratio. 9000:3000 simplifies to 3:1.

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4. **(3) 19,000** In the east, L100 is about 5,500; L200 is about 8,000; and L300 is about 5,500. Add: 5,500 + 8,000 + 5,500 = 19,000.
5. **(3) Year 3** Year 3 is the only year in which the bar for Store 2 is higher than the bar for Store 1.
6. **(4) 4:7** In Year 2, Store 2 had 20 employees. In Year 4, Store 2 had 35 employees. The ratio 20:35 can be simplified to 4:7.

Strategy 11: Work with Line Graphs (page 25)

1. Facts: None. You can tell this by looking at the graph; you don't have to calculate.
   Answer: **(1) 0** The line from January to February is level; therefore, there is no change in the number of subscribers.
2. Facts: March 5,000; July 12,000
   Answer: **(2) 7,000** Subtract: 12,000 – 5,000 = 7,000.
3. Facts: None. You can tell this by looking at the graph; you don't have to calculate.
   Answer: **(3) April** There is only one place on the graph where the line moves downward, which indicates a decrease. It isn't necessary to perform any calculations involving 20%.
4. **(2) 1300** Read the graph. The DVD titles are indicated by the lower line. The point that represents October is between 1000 and 2000. Only option (2) makes sense.
5. **(4) The number of DVD titles will increase.** The number of DVD titles has increased steadily since April. It is logical to conclude that this line will continue to move upward.
6. **(2) April** The space between each pair of points (VHS and DVD) is greatest for April. You do not need to compute the actual difference to solve the problem.

Strategy 12: Work with Circle Graphs (page 27)

1. Facts: **Children's Books, 28%**
   Answer: **(4) 72%** Remember, the entire circle equals 100%. If 28% of the books are children's books, then 100% – 28% equals the percent that are not children's books. 100% – 28% = 72%
2. Facts: **Fiction, 42%**
   Answer: **(3) 3990** Find 42% of 9500.
   9500 × 0.42 = 3990 fiction books
3. Facts: **Housing, 33 cents**
   Answer: **(2)** $\frac{1}{3}$ 33 cents is about $\frac{1}{3}$ of a dollar. Think: 33 cents × 3 = 99 cents, which is close to $1.
4. **(1) food** Look at the size of the sections. The section for food (45%) is less than half of the graph, but more than one-third of the graph.
5. **(2) $150.00** The Gannon family put 4% of its take-home pay into savings. Find 4% of $3750. $3750 × 0.04 = $150
6. **(5) 5:3** The Gannon family spends 45% on food and 27% on housing. The ratio 45:27 can be simplified to 5:3.

Strategy 13: Find Mean, Median, and Mode (page 29)

1. Process: **Add the four values and divide by 4.**
   Answer: **(3) 65** 48 + 115 + 62 + 35 = 260, and 260 ÷ 4 = 65
2. Process: **Arrange the amounts in order and find the middle value.**
   Answer: **(1) $100** In order, the amounts are: $65, $100, $100, $150, and $320. The middle amount is $100.
3. Process: **Find the vehicle type that was worked on the most often.**
   Answer: **(2) sedan** There were 32 sedans that had their oil and filter changed, more than any other type of vehicle.
4. **(1) 10** Arrange the numbers in order: 6, 8, 10, 14, 17. The middle value is 10.
5. **(2) 7** Add the number of free throws made, and divide by 5: 4 + 9 + 12 + 6 + 4 = 35, and 35 ÷ 5 = 7.
6. **(4) 15.4** Find the mean. Add to find the total number of sick days used, and divide by the number of days in the workweek: 18 + 15 + 12 + 8 + 24 = 77, and 77 ÷ 5 = 15.4.

Strategy 14: Solve Probability Problems (page 31)

1. Desired Outcomes: **3;** Possible Outcomes: **6**
   Answer: **(3) 1 out of 2** The probability ratio is $\frac{3}{6}$, which can be simplified to $\frac{1}{2}$.
2. Desired Outcomes: **3;** Possible Outcomes: **5**
   Answer: **(4) 60%** The desired outcomes are any that are <u>not</u> white, so you need to find the chance of spinning blue. 3 ÷ 5 = 0.6 = 60%, or $\frac{3}{5} = \frac{60}{100} = 60\%$
3. Desired Outcomes: **8;** Possible Outcomes: **20**
   Answer: **(2) 40%** 8 ÷ 20 = 0.4 = 40%, or $\frac{8}{20} = \frac{40}{100} = 40\%$
4. **(1) 12%** 3 ÷ 25 = 0.12 = 12%, or $\frac{3}{25} = \frac{12}{100} = 12\%$
5. **(5)** $\frac{3}{4}$ Six of the eight cards are equal to or greater than 4, and $\frac{6}{8} = \frac{3}{4}$.
6. **(5) Not enough information is given.** You have no way of knowing the number of cards in the box (the possible outcomes).

Strategy 15: Use the Calculator to Solve Data Problems (page 33)

1. Calculator Key Sequence: [(--] 102.92 [+] 135.28 [+] 95.04 [--)] [÷] 3 [=]
   Answer: **(3) $111.08** Add the three amounts and divide by 3, the number of amounts.
2. Calculator Key Sequence: 13 [÷] 25 [Shift] %
   Answer: **(5) 52%** Add to find the total number of workers: 13 [+] 12 [=] 25. The chance of getting a full-time worker is 13 out of 25. Divide 13 by 25, and change to a percent.
3. Calculator Key Sequence: [(--] 228 [+] 170 [+] 194 [+] 188 [--)] [÷] 4 [=]
   Answer: **(4) 195** Add the four scores, and divide the sum by the number of scores.
4. **(3) 67%** Examine the data to find the number of drivers who exceeded 25 miles per hour. There are 8. If 8 out of 12 were speeding, the chance of selecting at random a driver who was speeding is $\frac{8}{12}$.
   Divide: 8 [÷] 12 [=] [0.666666666], which rounds to 67%.
5. **(2) 32** Add all of the speeds quickly using a calculator, and divide by 12.
6. **(2) 29%** The chance of spinning green is 2 out of 7.
   Divide: 2 [÷] 7 [=] [0.285714285]. Convert to 28.57%, which rounds to 29%.
   Or use the percent function. Press: 2 [÷] 7 [Shift] %. The display reads [28.57142857], which also rounds to 29%.

STRATEGY 16: GRID IN ANSWERS TO DATA ANALYSIS PROBLEMS (page 35)

1. Fraction
   16/40, 2/5, or 0.4 Write a ratio using the percents from the graph.
2. Whole Number
   720 $2000 \times 0.36 = \$720$
3. Fraction
   5/11 After he removes 1 black sock, there are 11 socks left in the drawer, 5 black and 6 brown.
4. **6** The mode is the number that occurs most often.
5. **33** Add the amounts, and divide the sum by 5: $(31 + 35 + 54 + 14 + 31) \div 5 = 33$ points.
6. **6/24, 0.25, or 1/4** Twelve cards are red, and half of those (6) are equal to or greater than 7. $6/24 = \frac{1}{4} = 0.25$.

GED PRACTICE 2 (pages 36–37)

Part I

1. **(2) 35%** Find the total of those polled: $42 + 58 + 20 = 120$. Divide the part by the whole: $42 \div 120 = .35 = 35\%$.
2. **(4) 4th quarter** The 1st quarter had sales of about $25,000, and 4th quarter sales were about $75,000, which is 3 times greater.
3. **(1) 15%** Divide the part by the whole: $27 \div 180 = .15 = 15\%$.
4. **(5) 60%** Find the total number of pens, then divide the part by the whole. $15 + 10 = 25$, and $\frac{15}{25} = \frac{60}{100} = 60\%$
5. **4** 18 ft – 6 ft = 12 ft, and 12 ft ÷ 3 = 4 yd

Part II

6. **(3) ($320 + $280 + $285 + $375 + $345) ÷ 5** To find the average, total the amounts and divide the total by the number of amounts.
7. **(4) $7000** For the last three months shown on the graph, sales increased $2000 per month. Based on that trend, sales for May would most likely be $2000 more than April, or $7000.
8. **(2) $59** Arrange the tips in order from least to greatest or greatest to least. The median is the middle value.
9. **(1) $160** Since a circle graph represents the whole, or 100%, add the percents on the graph and subtract from 100% to find the percent budgeted for utilities: 40% + 25% + 25% = 90%, and 100% – 90% = 10%. Find 10% of the monthly budget: 10% of $1600 = $160.
10. **4** The mode is the value that appears most often in a set of data. In this case, 4 appears three times, the most of any value.

PRACTICE GED TEST (pages 38–41)

Part I

1. **(5) 26 yd 1 ft** Convert yards to feet, and subtract: 33 yd = 99 ft, and 99 ft – 20 ft = 79 ft. Convert to yards and feet: 79 yd ÷ 3 = 26 yd 1 ft
2. **(4) 900** Multiply length by width to find the area of a rectangle: $45 \times 20 = 900$.
3. **(3) 21** Use the formula for finding the volume of a cylinder: $V = \pi r^2 h$. Multiply: $3.14 \times (1.5)^2 \times 3 = 21.195$, which rounds down to 21 cubic feet.
4. **(4) 14.25** Since the answer needs to be in feet, convert feet and inches to feet: 4 ft 9 in = $4\frac{9}{12} = 4\frac{3}{4} = 4.75$ ft. Multiply the height of one pallet by the number of pallets stacked: 4.75 ft × 3 = 14.25 ft.
5. **(2) $\frac{4}{7}$** Add to find the total of all names except Whiskers: 15 + 8 + 12 = 35. Write a ratio of votes for the name Whiskers to the total of other names: $\frac{20}{35} = \frac{4}{7}$
6. **(2) 13.5** Since there is an even number of names, there are two middle values. Add the two middle values and divide by 2 to find the median. 12 + 15 = 27, and 27 ÷ 2 = 13.5
7. **(3) 4.25** Add the amounts, and divide by the number of amounts: 5 + 6 + 3.5 + 2.5 = 17, and 17 ÷ 4 = 4.25.
8. **(5) Not enough information is given.** The problem gives a combined time for the green and yellow lights. There is no way to know the length of time the light is green.
9. **(2) $153.44** Find the total amount for the three months, and divide by 3: $156.89 + $128.35 + $175.08 = $460.32, and $460.32 ÷ 3 = $153.44.
10. **(1) 8** Convert inches to feet: 96 ÷ 12 = 8, so 96 in = 8 ft.
11. **1.5 or 3/2** Divide the distance covered by the number of stepping-stones: 12 ft ÷ 8 = $1\frac{1}{2}$ ft.
    Change a mixed number to an improper fraction or a decimal: $1\frac{1}{2} = 1.5$ or $1\frac{1}{2} = \frac{3}{2}$.
12. **8/16 or 1/2** Find the total number of bulbs in the bag: 5 + 8 + 3 = 16. Write a ratio comparing the number of 75-watt bulbs to total bulbs: $\frac{8}{16} = \frac{1}{2}$.

Part II

13. **(3) 4^3** Since the length, width, and height of the container are equal, the container is a cube. Use the formula for finding the volume of a cube: $V = s^3 = 4^3$.
14. **(5) 130** Find how many milliliters are in 6 cans of soda pop: 355 × 6 = 2130. Convert 2 liters to milliliters: 2 L = 2000 mL. Subtract to find the difference: 2130 – 2000 = 130 mL.
15. **(3) 32** Convert the feet to inches: 2 ft × 12 = 24 in. Add the 8 in to the 24 in: 24 + 8 = 32 in.
16. **(4) 71** Add to find the total yards, and divide by the number of games: 65 + 85 + 40 + 70 + 95 = 355, and 355 ÷ 5 = 71.
17. **(4) 88** Two of the measurements needed are missing. Use the information given to find the missing measures: 17 ft – 9 ft = 8 ft, and 15 ft + 12 ft = 27 ft. Add all of the distances around the figure: 12 + 17 + 27 + 9 + 15 + 8 = 88 ft.
18. **(1) 339** Break up the figure into two rectangles. One rectangle measures 12 ft by 17 ft and the other measures 9 ft by 15 ft. Multiply to find the area of each rectangle: 12 × 17 = 204 sq ft and 9 × 15 = 135 sq ft. Then add to find the total area: 204 + 135 = 339 sq ft.
19. **(2) $\pi \times (2\frac{7}{8})^2 \times 4\frac{3}{8}$**
    Use the formula for finding the volume of a cylinder: $V = \pi r^2 h = \pi \times (2\frac{7}{8})^2 \times 4\frac{3}{8}$.

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20. **(5) $550** The graph shows sales increasing by $100 per day. If the trend continues, Day 5 should have sales of about $100 more than Day 4: $450 + $100 = $550.
21. **(4) $\frac{3}{5}$** According to the graph, 60% of donations go toward food, and 60% = $\frac{60}{100} = \frac{6}{10} = \frac{3}{5}$.
22. **(2) 30.5°** Since there is an even number of values, add the two middle values and divide by 2: 30 + 31 = 61, and 61 ÷ 2 = 30.5.
23. **10/4 or 5/2** To double a recipe, multiply the ingredients by 2: $1\frac{1}{4} \times 2 = \frac{5}{4} \times 2 = \frac{10}{4} = \frac{5}{2}$.
24. **2/52 or 1/26** There are 52 total cards, and 2 of those cards are red 7s. The chance of drawing a red 7 at random from the deck is $\frac{2}{52}$ or $\frac{1}{26}$.

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